A Strategic Approach to Emergency Preparedness in the UAE

Hamdan Rashid Alteneiji

Ph.D. Thesis **2015**

A strategic Approach to Emergency Preparedness in the UAE

Hamdan Rashid Alteneiji

School of the Built Environment
College of Science and Technology
University of Salford, Salford, UK

Submitted in Partial Fulfillment of the Requirements of the Degree of Doctor of Philosophy, May 2015

TABLE OF CONTENT

LIST OF TABLE

LIST OF FIGURES

DEDICATION

This thesis is dedicated to the most important people in my life, my father and mother

ACKNOWLEDGEMENT

It is without a shadow of a doubt that my first and most significant expression of my appreciation is to God. It is only through the will of the Almighty that this research endeavour has taken place.

My profound appreciation goes to my supervisor Prof Vian Ahmed, who devoted her valuable time in the past three years to guide me to achieve this enviable academic work. Your valuable advice, counsel and support through the most challenging period of documenting this research have contributed to the successful completion of this thesis.

I am greatly indebted to the ruler of emirates of Sharjah, H.H. Sheikh Sultan bin Mohammed al Qasimi and to the crown prince of emirates of Sharjah, H.H. Sheikh Sultan be Mohamed ben Sultan al Qasimi, who set me on this path of knowledge acquisition and self-development in the United Kingdom (UK). Thank you very much for giving me the opportunity to contribute to the advancement of our country, United Arab Emirates (UAE).

Thanks are due to the School of the Built Environment for the support during this course of study which has been a turning point in my life. I would like to extend my gratitude to the staff and experts in the National Crisis and Emergency Management Authority (NCEMA) and the Ministry of Interior, UAE.

Lastly, I would like to express my appreciation to all my family members, brothers and sisters. In addition, I would like to express my grateful thanks to my wife for her patience, and my beautiful children for their understanding and support during the demanding years of my study in the UK. You have provided me with motivation to finish my studies and add to my achievements. Thank you so much, I love you dearly.

DECLARATION

I certify that this thesis is the result of my own work. This work has been submitted based on the regulations of the University of Salford in order to obtain a PhD degree. In addition, some part of this work has been published in conferences held in the UK (see appendix A and B).

LIST OF ABBREVIATIONS

Abbreviation	Meaning
AIIMS	Australian Inter-service Incident Management System
CCA	Civil Contingencies Act
CCS	Civil Contingencies Secretariat
CDA	Civil Defence Act
CEIS	Common Emergency and Information System
CEM	Comprehensive Emergency Management
CMCP	Community Mechanism for Civil Protection
COCCS	Cabinet Office Civil Contingencies Secretariat
DCBA	Disaster Countermeasures Basic Act
DHS	Department of Homeland Security
DM	Disaster Management
DMG	Disaster Management Glossary
DRR	Disaster Risk Reduction
EC	Executive Committee
ECOSOC	Economic and Social Council
EM	Emergency Management
EMA	Emergency Management Australia
EMI	Emergency Management Institute
EMS	Emergency Management Standard
EOC	Emergency Operation Centre
EP	Emergency Preparedness
EU	European Union
EUC	European Union Committee
EWS	Early Warning System
GFNR	General Framework of National Response
HFA	Hyogo Framework for Action
HNSC	Higher National Security Council
HSPD	Homeland Security Presidential Directive 8
IAEM	International Association of Emergency Managers
IDP	Internally Displaced Persons
IEM	Integrated Emergency Management
IFRC	International Federation of Red Cross and Red Crescent Societies
ISDR	International Strategy for Disaster Reduction
LRF	Local Resilience Forum
LTCEM	Local team of crisis and emergency management
MCM	Mitigation Consequence Management
MCP	Mechanism for Civil Protection
MIC	Monitoring Information Centre
MPRR	Mitigation, Preparedness, Response and Recovery
NCEMA	National Council of Emergency Management Authority
NCM	National Centre for Meteorology
NDRF	National Disaster Recovery Framework
NGA	National Governors' Association
NGO	Non-Governmental Organisation
NIMS	National Incident Management System

NMF	National Mitigation Framework
NPF	National Prevention Framework
NPF	National Protection Framework
NPIA	National Policing Improvement Agency
NPS	National Preparedness System
NRF	National Response Framework
NRP	National Response Plan
PDCA	Plan, Do, Check, Act
PPRR	Prevention, Preparedness, Response and Recovery
RA	Risk Assessment
RM	Risk Management
SEMC	State Emergency Management Committee
UAE	The United Arab Emirates
UCPM	Union Civil Protection Mechanism
UHNSC	Under the Higher National Security Council
UN	United Nations
UN ISDR	United Nations International Strategy for Disaster Reduction
UNDP	United Nations Development Program
UNEP	United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
UNISDR	United Nations International Strategy for Disaster Reduction
WCDR	World Conference on Disaster Reduction
WFP	World Food Programme

ABSTRACT

Disasters experienced in recent years have had significant impact on people, property and the environment, and this widespread impact has informed the review of policies, measures and approaches in managing them. Despite response arrangements such as multi-agency response, military efforts and various other international efforts, disasters still continue to have a negative impact on communities across the world. While response approaches and arrangements are not incorrect, they are at times not grounded in the minimal response strategies from the preparedness phase. This gap emphasises the related concepts of practices in emergency management, its phases, and the role of strategic preparedness in ensuring that the impacts of emergencies are better managed.

However, review of existing practices and literature shows that there are various explanations and operations for the preparedness phase which do not actually result in effective response to and mitigation of emergency/disaster impacts. The preparedness phases as operational in the United States of America (USA), the United Kingdom (UK) and Australia were all examined to identify best practice and effective preparedness cycles and systems. This approach to the research proved useful in identifying the main gaps and problems in the preparedness phase in the United Arab Emirates (UAE), which is the research case study.

Therefore, this research aims to investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government to adopt strategic approach for improving emergency preparedness in the UAE. Following examination of the National Response Framework (NRF), a series of interviews was carried out in the UAE which confirmed that no preparedness system, framework or cycle existed. Qualitative methods of data collection and documentation were adopted to examine the current preparedness practice in the UAE, its application and effectiveness. Content analysis was used to analyse these data which helped to identify barriers to the current deployment of the preparedness phase in the UAE. The findings of this research show that the eight elements for emergency preparedness are missing in the UAE emergency management system. This finding affirms the need for a strategic approach which combines all eight elements of emergency preparedness in the UAE. Therefore, both barriers to deployment of the preparedness phase and the lack of elements of preparedness provided the basis for the recommendation made in order to strategically improve the emergency preparedness phase in the UAE

CHAPTER ONE
INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Disasters have always been present in human history (Haddow et al, 2011). History records disasters that have happened in the past and provides us with lessons on those that will happen in the future. However, the world has reacted, and since the Second World War governments have created acts to reduce and prevent disasters (O' Brien, 2005). As a result, great efforts have been made in this regard, on the one hand by international organisations such as the United Nations (UN) and European Union (EU) and on the other hand by developed countries such as the United States of America (USA), United Kingdom (UK) and Australia. These efforts will be covered in detail in the next chapter.

The United States (US) Federal Emergency Management Authority (FEMA) explained that disaster occurs when an extreme event exceeds the ability of a country or community to cope with that event. Although many developing countries have found it necessary to request assistance in responding to disaster events in recent decades, it seems even developed countries have begun to suffer similar impacts of disasters (Ball and Ball-King, 2013).

Many of these disasters or occurrences of unprecedented scale of emergency have found their cause in climate change, globalisation, human-activity, and rapid urbanisation (Perrow, 2011). As such, there is a global sense of duty for countries and international institutions to seek means of developing more effective frameworks for managing emergencies. In addition, the need to be better prepared for incidents such as disaster or emergency of any scale has risen significantly in the last few decades. This is due to the impact of emergencies and disasters such as the 9/11 attack of 2001, the Asian tsunami in 2004, Hurricane Katrina (2005), and the Japan earthquake and tsunami (2011). All these events have demonstrated that disasters can occur with little warning and minimal time to prepare, which suggests that countries need to begin planning in advance to manage any type or level of hazard, risk, emergency or disaster to which they are prone.

Having said this, authors such as Perrow (2011) have explained that preparing for unforeseen or foreseen disasters can be challenging. Preparedness efforts can also be influenced by several factors which can either hinder the planning process or make it less effective (Waugh

and Tierney, 2007). However, the devastation that disasters and emergencies cause has enforced the need to persist in seeking ways to improve how disasters and emergencies are prepared for and responded to, so that their impacts can be minimised or prevented (Smith and Fischbacher, 2009). This continues to be an ongoing and joint process which at times involves the intervention of international institutions such as the United Nations (UN). While the UN mostly intervenes during disaster events in developing countries and in supporting disaster risk reduction projects, developed countries have also learnt to pool resources to facilitate response to disaster events (Fagel, 2011). One example of recent UN intervention is the April 2015 earthquake in Nepal, with a death toll of more than four thousand (The Telegraph, 2015). This pooling of resources has become necessary because many developed countries such as the USA, UK and Australia, to mention a few, have been experiencing disasters or emergencies of differing magnitudes which are now affecting lives and livelihood, quite apart from the large scale destruction taking place in these countries in the last decade. Lessons learnt from these countries have inspired research, articles and academic work to seek explanation for the problems experienced during response to various incidents, and to seek answers for their occurrence on such a scale. Further, the quest for better understanding of emergency and disaster management has seen the phases of emergency management subjected to review and analysis.

While some reviews and analysis have provided better understanding of how the response and recovery phases can be improved (Coppola, 2011), the preparedness phase seems to require more in-depth investigation since response to major events continues to be challenging (Berke and Campenella, 2006). As a whole, it is generally acknowledged that the emergency management phases are essential in order to understand and to ensure ability to mitigate, prepare for, respond to and recover from any form of disaster or emergency (Coppola, 2011). Figure 1.1 illustrates the emergency management cycle:

Figure 1.1The cycle of EM. Source: U.S. Department of Education (2010)

This cycle shows the relationship between the phases of emergency management without necessarily emphasising the importance of one over the other. The prevention/mitigation phase links to the preparedness phase which then connects with the recovery phase followed by the prevention/mitigation phase. This cycle means that all the phases of emergency management are a continuous process which link with one another, and the activities that take place in a phase affect the immediately following phase and subsequent phases (Blanchard, 2007). Thus, a good understanding of emergency management phases is considered important for developing programmes, measures and activities for any of the phases illustrated in figure 1.1. The emergency management cycle is widely used in several developed countries, as well as developing countries, to manage emergencies and disasters, and has been considered useful to a great extent.

However, throughout the emergency management sector, approaches that are sufficiently comprehensive to allow a general planning process to be applied to prepare for the occurrence of an emergency are being investigated and suggested. Some of these approaches include an 'all-hazard' approach, comprehensive emergency, all stakeholder approach, multiagency approach, etc (FEMA, 2007), and are examined within the context of usage in different countries in chapter two. By way of introduction, the current chapter establishes the rationale and purpose for undertaking this research. To achieve the purpose, a research aim, sets of objectives and research questions are set out and outlined in subsequent sections in this chapter. The approach taken for the research will be outlined in stages while an attempt is made to illustrate the research flow which guides it to successful completion.

1.2 RESEARCH RATIONALE AND PURPOSE

As discussed in the introduction, no country is exempt from the occurrence or impacts of disasters and emergencies. Even the most developed countries in the world have suffered significant loss of lives, property, or both during one disaster, crisis, emergency or another (Kumar, 2013) and this includes the United Arab Emirates (UAE). The UAE is one of the Arab countries; it shares its borders with Oman to the east and Saudi Arabia to the south, as well as with Qatar and Iran. At the south-east of the Arabian Peninsula on the Persian Gulf, the UAE, as the name suggests, is a federation of seven emirates, each governed by a hereditary emirate but operating under a single national president (UAE Interact, 2013).

As noted by Dhanhani et al (2010), the natural disaster risk for the UAE is surprisingly high. Taking Fujairah as an example, "the following rapid onset natural hazard events have occurred in the period 1995-2009: Masafi earthquake 2002, Al Qurayah flood 1995, Al Tawaian landslide 2005, tropical storm Gonu 2007 and Sharm flash flood 2009." A second major potential threat is that of tsunamis. The 2004 event in Indonesia affected the entire Indian Ocean basin and, although it did not have a significant impact on the UAE, the tsunami did produce small waves of up to 30 cm in height along UAE coasts (Kowalik et al., 2005). It is also clear from historical records that the threat can be much higher than that, depending on the location of the quake.

According to Jordan et al. (2010), "in November of 326 B.C. Alexander the Great was hoping to return to Greece by taking a sea route from what is now the Pakistani Indus delta region. However, a large wave, believed to be a tsunami, destroyed the Macedonian Fleet in this area…….the Arabian Sea which borders the eastern coasts of the UAE is a large potential source area for tsunamis that could seriously affect the UAE." The 2007 tropical storm Gonu lashed the eastern cost of the UAE, as can be seen in figure 1.2. This illustrates that tropical storms do not only have a historical reference in the Gulf region, but rather that history seems to be repeating itself and on a greater scale.

Figure 1.2 Tropical Storm Gonu (Source: Dubai and Sharjah TV, 2007)

In addition, it was recently reported by the seismic network of the National Center of Meteorology and Seismology that, "an earthquake in the eastern off shore of UAE, about 10 km into the Omani sea and at a depth of 4 km, occurred on Sunday 9 March 2014, with magnitude 3.1 earthquake on the Richter scale, or about 3 on the Mercalli scale at 23:46:29 pm (local time). Although weak, it was felt in the Diba areas" (Emirates, 2014).

Setting aside past disasters, the UAE will certainly face significant challenges in dealing with hazards, whether environmental or man-made, not least due to the fact that, since independence in 1971, the UAE is using considerable oil resources. The economic growth of the UAE has been striking and impressive, but it is this very development that could potentially cause an increase in crisis, emergency and disasters, as explained by Bankoff et al. (2004).

As one of the most dramatically growing nations in the world, the UAE is at particular risk of emergencies such as traffic accidents of any scale, terrorist attacks, flooding, tremor, fire, sand storm, tropical storms to mention a few. For example, over 500 UAE skyscrapers have panels composed of flammable material (Gulf News, 2012), which significantly increases the potential for serious fire damage, loss of life, property and investments, should an accident occur. However, the nature of construction in the UAE is just one factor. The UAE has a huge amount of air traffic due to its status as a popular tourist destination, centre for trade and international travel hub; thus the busy air traffic in Dubai and Abu Dhabi also bears a risk for air accidents. Indeed, there have been notable air accidents in Dubai and Sharjah in recent years (Li et al., 2007). Equally, economic growth has brought with it immigration issues, hostage situations and political upheaval and, as Suter (2006) points out, ethnic and labour disputes do occur in the UAE.

However, although disasters or emergencies have occurred in the past and are likely to occur in the future, there is no well-defined strategic plan on how to deal with these events. Inadequate response to past emergencies in the country has led to loss of lives and insurance claims worth millions of US dollars (Kumar, 2013). Such losses and the potential impact of continued occurrence of emergencies in the UAE has the potential to threaten its vibrant economy and investment in development. Hence, this need for better preparedness for disasters or emergencies has motivated research in this area. Furthermore, it is generally observed by practitioners in the public safety sector in the UAE that existing emergency management standards are not as well advanced as the economic status of the country.

According to Dhanhani (2010), an interview with the Director-General of the National Council of Emergency Management Authority (NCEMA) explained that, as recently as 2010, progress was still ongoing in order to improve the capacity of the UAE to deal with all kinds of threat, natural or man-made emergencies. Furthermore, it has been recommended by Jordan et al, (2005) that any construction along the eastern coast of the UAE should involve tsunami mitigation planning, including public education. While evidence of global risk, evolving risks and recommendations for improvement reinforced the rationale for this research, the main reason for undertaking this research is based on the gaps identified during several years of work experience in the emergency sector in the UAE. The need to improve the preparedness phase became increasingly evident from the ineffective response witnessed during the researcher's work experience.

While these ineffective responses reflect problems with the preparedness phase, the vision of His Highness; Khalifa bin Zayed Al Nahyan to ensure excellence in managing crises, emergencies and disasters (NCEMA, 2012) further justifies the rationale for this research. The national mission regarding emergency, crisis and disaster management is to minimize the effects of emergencies and crises, save lives, and preserve property and assets by improving the UAE's capabilities in coordinating national efforts (NCEMA, 2012). Hence all these factors form the rationale behind conducting this research. Therefore, this research examines the UAE standard for emergency management in general and the preparedness phase in particular to determine the suitability for the level of preparedness in the UAE. By so doing, the research findings will help to propose a strategic approach, depending on the result of the findings. This will help to ensure the effective implementation of emergency management in the UAE, taking into consideration existing practice, policies and regulations for improved emergency preparedness.

1.3 RESEARCH AIM, OBJECTIVES AND QUESTIONS

1.3.1 Research Aim

The aim of this research is to investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government to adopt a strategic approach for improving emergency preparedness in the UAE.

The following objectives have been drawn from this aim to achieve the purpose of the research:

1.3.2 Research Objectives

1. To provide a historical overview of emergency management up to present day practice, including a review of emergency management frameworks established by national governments.
2. To examine the emergency management standards and preparedness frameworks applied in the US, UK, Australia and the UAE.
3. To identify and evaluate the existing emergency preparedness elements in the US, UK, Australia and UAE.
4. To explore and identify the barriers associated with emergency preparedness in the UAE.
5. To draw recommendations for effective emergency preparedness strategy for the UAE.

1.3.3 Research Questions

Two main questions will be asked to ensure that valid and reliable data are collected, from which effective recommendations can be drawn to inform effective policy and practice in emergency management in the UAE, particularly with a view to improving emergency preparedness. These two questions are:

1. What are the key elements that can influence the formation of appropriate Emergency Preparedness (EP) in the UAE?
2. What are the barriers that hinder the formation and implementation of UAE's emergency preparedness?

1.4 RESEARCH APPROACH

The following tasks were undertaken as a means to achieving the research aim, objectives and research questions, via the stages shown below:

STAGE I – Literature Review

A comprehensive literature review was carried out in order to:

- Develop an understanding of emergency management concepts and standards used in developed countries
- Review existing emergency preparedness standards and frameworks and models in the body of knowledge in order to identify the key elements which effect emergency preparedness.
- Study the profile of the UAE as one of the Gulf countries vulnerable to disasters and examine the current standards adopted by the country to manage disasters, emergencies and crisis.

STAGE II – Research Methodology

Study was made of the relevant methodological philosophies and approaches in order to identify the suitable methods of data collection for this research. As a result, the research will adopt the pure qualitative method of data collection since the researcher is looking for meaning, views and attitudes rather than figures or statistics, which will help to explore the barriers and deficiencies facing emergency preparedness in the UAE.

This will be achieved via the following methodological steps:

A. The first step will be a pilot study using input from international experts in the field of emergency management in order to further confirm and examine key elements affecting emergency preparedness identified from the literature review.
B. The second step will be the primary data collection at federal level (NCEMA) via semi-structured interviews, in order to gain a deep understanding of the current situation of emergency preparedness in the UAE, which will help to provide suitable recommendations for the UAE government.
C. Thirdly, the responses from the primary data gathered at federal level (NCEMA) will then be triangulated at local level (Local Team of Crisis and

Emergency Management) (LTCEM) in order to confirm the validity of the responses from the federal level and understand how their input can be applied to the local level.

D. Finally, the barriers identified in stage B that contribute to emergency preparedness will be evaluated and ranked in the order of their importance with both federal and local levels.

1.5 CONTENT/STRUCTURE OF THESIS

This thesis is divided into seven chapters, as described below:

CHAPTER I - Introduction

This introductory chapter is divided into four main parts. Part 1: Background to the subject of emergency management; Part 2: Description of the aims, objectives and research questions; Part 3: Research approach; Part 4: Content of thesis.

CHAPTER II - Literature Review (1)

This chapter offers a description of the literature review from a variety of secondary sources. It starts with evaluating the definition of emergency management, then highlighting international efforts in the area of emergency management provided by the UN and EU and a discussion of international standards of emergency management, focusing on the world's most economically developed countries. Then it reviews emergency management standards in the United Arab Emirates (UAE).

CHAPTER III – Literature Review (2)

This chapter will be the second literature chapter which will concentrate on the preparedness phase by defining preparedness, then exploring the key elements which affect emergency preparedness through several standards and frameworks from the available literature, in order to identify the key elements affecting the emergency preparedness stage.

CHAPTER IV - Methodology

This chapter provides an overview of the approaches and methodology that will guide the research. It aims to justify the selection of different approaches. This study will use a mono method, which is the qualitative method, because the researcher is looking to

collect views and the attitudes from the interviews aiming to explore and investigate the current situation for emergency preparedness in the UAE based on the eight elements discovered from the literature.

CHAPTER V – Pilot Study and Documentation

This chapter provides an overview of the international experts' feedback in terms of whether the eight elements are sufficiently comprehensive to be used as a basis for the emergency preparedness stage. Having received the experts' feedback for these elements, it is necessary to investigate these elements in the UAE's emergency management documentation, in terms of the extent to which they are all covered, if at all.

CHAPTER VI – Data analysis and Discussion

This chapter discusses the outcomes of the data collection and reviews the findings. It gives background information on the participants in the study and outlines their roles and relationships within the field of emergency management. Data collection was conducted via three stages: The first was at federal level and aiming to examine the current situation/practice of emergency preparedness based on the eight elements discovered from the literature and confirmed by the experts. The second stage will be at local level and aiming to confirm the findings at federal level. The third stage will be with experts at both federal and local level and aiming to rank the barriers discovered from the federal level and confirm with the local level. In addition, this chapter will discuss the findings from literature. Based on this, it will draw up recommendations for emergency preparedness in the UAE.

CHAPTER VII - Conclusion and Recommendations

The final chapter brings the research to a conclusion. It assesses the success of the study and discusses the limitations of the research as well as the recommendations for UAE emergency management in general and emergency preparedness in particular. Furthermore, the study's contribution to the topic of emergency management and its usefulness for future research will also be considered. This process is illustrated in figure 1.3, which shows the flow of research investigation:

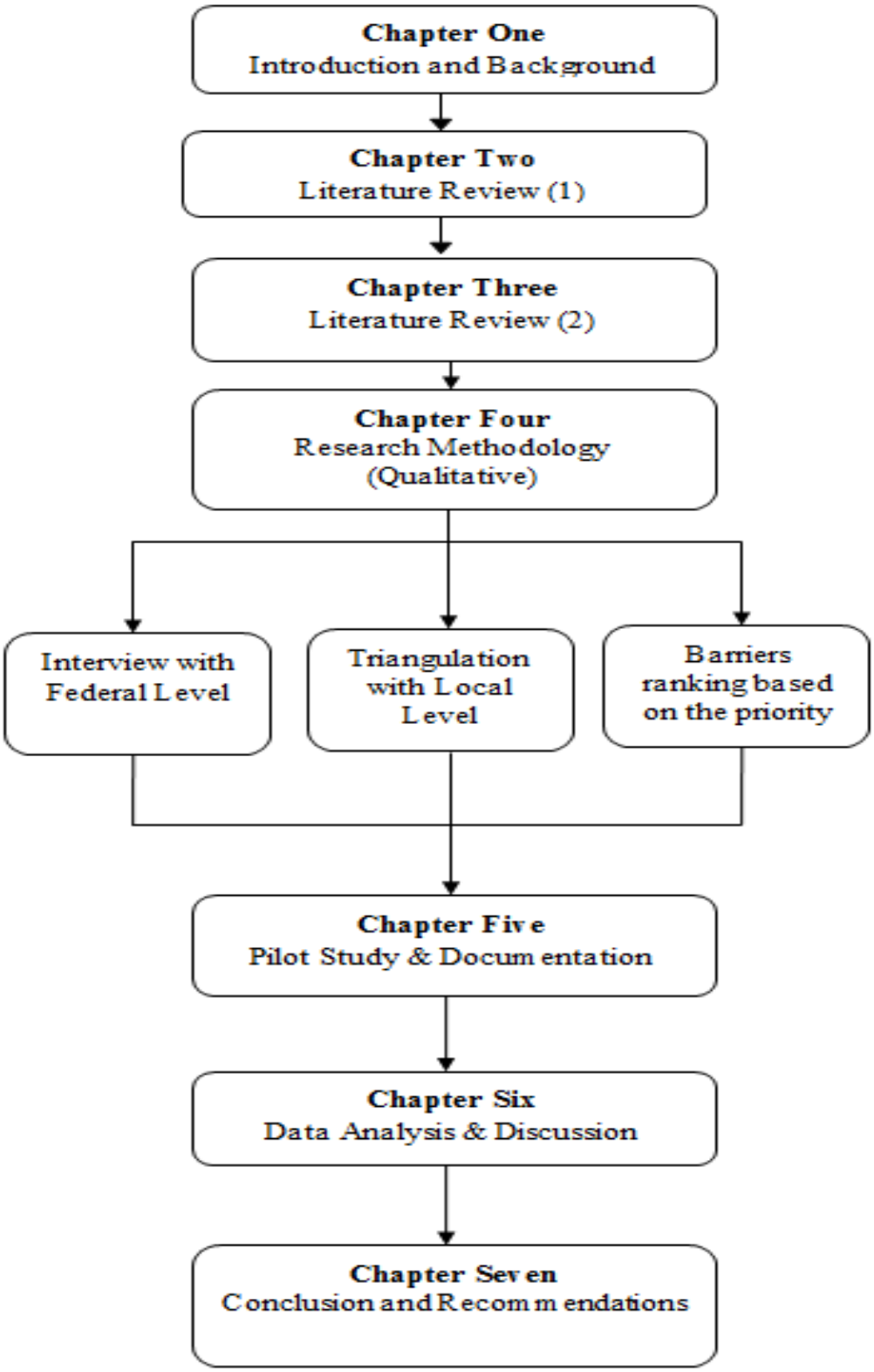


Figure 1.3 The Research Approach

CHAPTER TWO
EMERGENCY MANAGEMENT STANDARDS IN DEVELOPED COUNTRIES AND THE UAE

2.1 INTRODUCTION

This chapter is an extended literature review on emergency management concepts, principles and standards. It is written with special consideration as to the meaning of emergency management, in order to evaluate its various definitions, its principles and phases used to ensure the effectiveness of emergency management standards. Therefore, sections in this chapter examine global efforts and involvement of international organisations and institutions, as well as national government, in emergency management. To achieve the objectives of this research, standards and frameworks used in countries such as the United States (US), United Kingdom (UK) and Australia are examined, and compared with the emergency management standard in the UAE. Since emergency management practice in the UAE is modelled after those used in the aforementioned countries, the chapter aims to critically review emergency management standards in these countries in order to identify problems and gaps in the UAE system. This chapter is key to achieving both the first and second research objectives, and is central in drawing recommendations for the fifth objective: an effective emergency preparedness strategy for the UAE. Therefore the purpose of this chapter is to help achieve three of the five research objectives.

2.2 WHAT IS EMERGENCY MANAGEMENT?

Emergency Management (EM) is an area which involves a number of actors and dimensions. The actors could be government institutions, non-government or academic institutions. Although there is a common understanding of emergency management, each actor has its own way of defining emergency management and hence it can become a confusing concept. To establish a unique concept of emergency management, the researcher has examined a range of literature on its definition, as well as extracting definitions from international institutions such as the United Nations International Strategy for Disaster Reduction (UNISDR), from governmental organisations such as the Federal Emergency Management Agency (FEMA), and from academic institutions that carry out research on various aspects of EM. The aim is to compare and contrast in order to select the appropriate definition for this research.

In reviewing extensively the literature, it can be seen at first glance that there is an overlap between the terms ‘emergency’ and ‘disaster’. In fact, there is a slight difference between these two terms, the criteria being the scale of disruption, number of fatalities and capacity of communities to deal with the event. Therefore, it is necessary to clarify this by defining the two terms, starting with disaster.

According to Moore and Lakha (2006) management and response to disaster may be a challenge if appropriate mechanisms are not in place and if the risk to which the public is exposed is not anticipated. This is because disaster is a sudden event which may cause human, material and economic or environmental loss, seriously disrupt the functioning of a society, and exceed the society’s ability to cope using its own resources (IFRC, 2014). Authors such as Perry and Quarantelli (2005) also argued that disasters are events which occur on a large scale and cause widespread impact, leading to severe loss of lives, property and devastating impact on the society or community. This description emphasizes a scale leading to loss of lives at least in the hundreds. The IFRC would consider incidents such as the 2004 Asian tsunami a disaster since support and help were required from all over the world.

According to Perry and Quarantelli (2005), the 9/11 attack can also be considered as a disaster due to the number of deaths recorded and the widespread destruction, although response support was not requested from other countries, as was the case with the Asian disaster. However, the term ‘emergency’ is also used to refer to incidents which can or do cause disruption to the community, and various countries have similar definitions of an emergency. According to the UK’s Civil Contingency Act (CCA) (2004), an emergency is an “event or situation which threatens serious damage to human welfare in a place and to the environment of a place, or war, or terrorism which threatens serious damage to security requiring implementation of special arrangements by one or more category 1 responders” (CCA, 2004:217). This definition is similar to that used in Australia, where emergency is considered as an event, actual or imminent, which endangers or threatens to endanger life, property or the environment, and which requires a significant and coordinated response (EMA, 1998). So hazardous events may be known as 'accidents', 'incidents', 'emergencies', and 'disasters'; according to the scale of the event, the number of organisations involved and their ability to cope using their normal resources (Moore and Lakha, 2006). In addition, there is another overlap between the terms ‘emergency management’ and ‘disaster management’.

Therefore, in this research, the word ‘emergency’ will be used to mean events or incidents which can be managed within a country using that country’s resources, organisations and within manageable scale. The term ‘disaster’, on the other hand, will be used to mean events which exceed capacity, and which occur on a large scale, claiming many lives and losses. Despite this overlap between the terms, this research will use both ‘disaster’ and ‘emergency’ to describe types of hazard, since the principal of EM deals with all kind of hazards - see section 2.2.1. In other words, regardless of whether the threat is an emergency or a disaster, the principle of emergency management considers it as a threat for which it is necessary to be prepared. The principle of EM will be explained later in section 2.4.2. However, this research will not use the term disaster management, but rather the term emergency management, with specific focus on the emergency preparedness phase. As a result the next section will evaluate the different definitions of EM in order to select the appropriate definition for this research.

2.2.1 Evaluation of Definition of Emergency Management

According to Haddow et al., (2011) EM as practiced in several countries involves, “planning and institutional arrangements to engage and guide the efforts of government, non-government, voluntary and private agencies in comprehensive and coordinated ways to respond to the entire spectrum of emergency needs.” This definition describes EM by outlining the cooperation of process, procedures and organizations. The need for cooperation between all elements of EM is also emphasized in the definition of the International Association of Emergency Managers (IAEM). IAEM defines EM as "the managerial function charged with creating the framework within which communities reduce vulnerability to hazards and cope with disasters" (IAEM, 2013).

The above definition goes further by describing cooperation as a managerial function but includes the need for creating a framework for communities to reduce their exposure to hazards. However, EM is not limited to simply procedures and processes; it is considered as a process which operates based on a comprehensive principle. This comprehensive principle - also called a systematic approach - guides all the phases of EM and its standard (Coppola, 2011). This standard and four phases are illustrated in Figure 1.1 in Chapter 1. The four phases are central to the comprehensive principle of EM which is widely used at national level in many countries (Coppola 2011), and is significant because it helps with the decision-making process and mobilizing of resources required for meeting the needs of people during and after an emergency or disaster (IAEM, 2013). For example, the US agency responsible for

EM; FEMA, states that "Emergency Management is an organised analysis, planning, decision-making, and assignment of available resources to mitigate (lessen the effect of or prevent), prepare for, respond to, and recover from the effects of all hazards (FEMA, 1995).

According to FEMA, the goal of EM is to save lives, prevent damage, and protect property and the environment if an emergency occurs. Some academic definitions of EM also consider it as the whole process of planning and intervention for rescue and relief to decrease the impact of emergencies as well as the response and recovery measures that should be taken so as to mitigate significant consequences for the country and its people, be they economic, social, or environmental, usually through an Emergency Operation Centre (EOC) (Nimpuno, 1998).

This definition focuses on the potential impacts (social, economic and environmental consequences) of emergencies on the community, and helps to emphasize the importance of planning and an adequate preparedness framework for reducing these and any potential impacts. Waugh (2000) states that EM is the management of risk so that societies can live with environmental and technological hazards and deal with the disasters that they cause. It is clear that Waugh's view here is based on management of risk as well as on the acknowledgement that risks are part of human societies and therefore risk management is essential to their survival. While this is true, people and the society as a whole can only be confident to live with risk when there are preparedness measures in place in which they have confidence.

In relation to the social calamity resulting from past disasters, and to mitigate catastrophic events, modern societies have set up structures to manage natural and technological hazards and decrease their impact on human life and material property (Wilson, 2001). Wilson's view is to some extent similar to Waugh's view and both authors emphasize technological hazards. However, Wilson and Oyola-Yemaiel (2001) argued that EM is a process of managing the hazards which have potential impacts on the social community, a definition which does not specify the preference of any type of hazard over the other, but rather raises cautiousness about the need to ensure a process for managing their impacts. These definitions are crucial to this study area in emphasizing that irrespective of the hazard, its impacts can be mitigated through adequate preparedness measures. While risks are part of living, as inferred by Waugh (2000), they still need to be managed, their impact reduced and mitigated. This can only be done through good, effective and adequate preparedness.

Therefore, it is clear from this review that emergency management is a complicated area, requiring significant resources and effort. Moreover, levels of perception, argument and explanations can vary significantly as professionalism varies significantly across the globe, and views are influenced by culture and religion among communities. It also seems that there is lack of coordination and agreement about a generic definition among international and national organisations. Hence, for the purposes of this study, the Michigan Department of State Police's definition of EM will be adopted: "a comprehensive system of policies, practices, and procedures designed to protect people and property from the effects of emergencies or disasters. It includes programs, resources, and capabilities to mitigate against, prepare for, respond to, and recover from effects of all hazards" (Michigan DOSP, 1998).

This definition is adopted because it provides a comprehensive, clear and practical understanding of what EM is from a holistic perspective of practice and theory. Furthermore, it provides a general framework for all kind of hazards as well as the four phases of EM as presented in section 2.4.1. Moreover, the definition aligns with the main aim of this research.

Having chosen the definition of EM used for this research, the next section provides an overview of emergency management. This starts with global efforts and the inception of the strategies used by international organizations and institutions. Other sections examine the EM standards used in developed countries such as the US, UK, and Australia, and that of the UAE.

2.3 GLOBAL EFFORTS IN EMERGENCY MANAGEMENT

This section aims to discuss the global effort regarding emergency and disaster management which guides international support provided by one country to another during disaster situations. The impact of disasters, particularly when they occur in developing countries, has inspired the need to develop strategies, structures, plans and methodologies aimed at helping to deal with such disasters or complex emergency situations. While it is the legislative duty of government to protect, guide and ensure the safety of the public as well as preserve assets and development from the impact of disasters, when this fails or is insufficient, international efforts are requested (Coppola, 2011). This may take the form of assistance from other countries or of international organizations or institutions such as the United Nations (UN) or the European Union (EU) in planning, responding or recovering from identified risks or disaster. Such efforts or interventions are undertaken based on agreed terms of involvement in

disaster relief intervention in countries that require assistance (Coppola, 2011).This section briefly discusses the interventions, guidelines and strategies used by the UN for emergency management across the globe, and applies from an international perspective from which many countries operate when they have to provide assistance in another country.

2.3.1 United Nation Strategies

The UN as an international organization uses various agencies, programmes, funds and subsidiary bodies to provide support, relief and empowerment to countries affected by the impact of disasters or major emergencies. For example, the United Nations High Commissioner for Refugees (UNHCR) has responded to a wide range of emergencies resulting from movement of the population from one country to another due to devastating emergency such as an earthquake, flood or a man-made disaster such as war (UNHCR, 2007). One of the major responsibilities of UNHCR in relation to EM is to coordinate the response of the UN system to the plight of refugees (UNHCR, 2007, p-7).

UNHCR also promotes a multi-functional team approach that involves delivering a community-based response with regard to emergency situations (UNHCR, 2007, p-12). This is particularly required during complex emergencies which lead to internal displacement of people. Another UN organization, the UN International Strategy for Disaster Reduction (UNISDR) deals with Disaster Risk Reduction (DRR). UNISDR describes DRR as an action which aims to reduce the damage caused by natural hazards such as earthquakes, droughts, floods and cyclones, through an ethic of prevention (UNISDR,2014). DRR is considered according to four major tasks: coordinate, campaign, advocate and inform, as shown in Table 2.1 below:

Table 2.1 Tasks of DRR (Adapted from UNHCR, 2007)

DRR Tasks	Description
Coordinate	• Coordinate international efforts and monitor, guide and report regularly on progress of the implementation of the Hyogo Framework for Action. • Organize a twice-yearly global platform with leaders and decision makers to progress risk reduction policies and support the establishment of national, regional and thematic platforms
Campaign	• Campaign to create global awareness of benefits of DRR and empower people to reduce their vulnerability to hazards. Campaigns currently focus on safer hospitals, schools and resilient cities
Advocate	• Advocate for greater investment in risk reduction actions for protection of lives and assets. Focus includes DRR education, climate change adaptation, and increased participation in the decision making process.
Inform	• Inform and connect people through practical services and tools such as publications on good practices, the risk reduction website Prevention web, country profiles and the Global Assessment Report on DRR

The major difference between UNHCR and UNISDR is that UNHCR holds the responsibility to participate in the response and recovery stages in the emergency management cycle whereas UNISDR covers two additional stages, namely mitigation and preparedness. There are several UN commissions and agencies involved in EM at varying degrees depending on the scale of the emergency situation, but they are generally coordinated by UNHCR and UNISDR. Among these are the World Food Programme (WFP), the Economic and Social Council (ECOSOC) and the United Nations Environment Programme (UNEP). In addition to this, the UN has supported world conferences to advance the strategies of disaster management. A few examples of this are the Yokohama strategy and the Hyogo framework. In May 1994, the UN member states met at the World Conference on Natural Disaster Reduction (WCDR) in Yokohama, Japan, to assess the progress achieved by the International Strategy for Disaster Reduction (ISDR).This framework forms the basis for any operation or interventions provided by the UN or any country willing and able to provide humanitarian assistance or foreign aid.

As a global recognition of the need for disaster management, the Yokohama strategy emphasized the importance of disaster prevention, mitigation, preparedness, and relief as the four elements that contribute to and gain from sustainable development policy implementation. In addition to environmental protection and sustainable development, these elements were considered to be closely interrelated. As result of this world conference, nations were admonished to incorporate the four elements in their development plans and

ensure effective follow-up measures at community, national, sub-regional, and international levels. Chiefly, disaster prevention, mitigation and preparedness were considered as more important for disaster reduction than response. This is because prevention helps to improve safety in the long term and is fundamental to integrated disaster management (Coppola, 2011:7).

Held in Hyogo, Japan, in 2005, the WCDR was attended by more than 4000 participants, with delegates representing 168 governments, 78 UN observers and specialized agencies and organisations, 161 Non-Governmental Organisations (NGOs), and journalists from 154 media companies (UNISDR, 2005). The recommendations of the conference were presented in what is called the "Hyogo Framework for Action" (HFA). The HFA emphasized the determination to work for a substantial reduction in loss of life and in the social, economic and environmental material properties of communities and countries in a period of 10 years ranging from 2005 to 2015. The Hyogo framework was reviewed in March 2015 to reflect a 15-year action plan, called the Sendai framework. Taking into account the limitations of the HFA, the Sendai framework (2015) focuses action in and across sectors at local, national, regional and global levels by prioritising the following areas:

1) **Understanding disaster risk**: by promoting the collection, analysis, assessment, and management of disaster risks, of capacity, exposure and hazard characteristics, and the use of relevant data and practical information at local, national, regional and global levels (p.10).
2) **Strengthening governance to manage disaster risk**: through integration of disaster risk reduction within and across all sectors and by assessing technical, financial and administrative disaster risk management capacity (p.12). It is important to do this by guiding actions, collaborating and actively engaging to promote mutual learning and exchange of good practice and information (p.12).
3) **Investing in disaster risk reduction for resilience**: by allocating the necessary resources such as logistics and finance where appropriate at all administrative levels (p. 15). It is also important to protect disaster risk resilience in work places through structured and non-structured measures. (p. 15)
4) **Enhancing disaster preparedness for effective response, and in recovery, rehabilitation and reconstruction**: To achieve this, there needs to be regular review of policies, plans and programmes, as well as establishment of community centres for promoting public awareness of preparedness and response activities for reducing

> disaster risk. The priority emphasises the importance of training the existing workforce and voluntary workers responsible for disaster response as well as ensuring continuity of operations and planning (p.18).

In addition to this, the Sendai framework emphasised the roles of stakeholders in implementing these actions and the need for cooperation and clarity of roles in implementing the priorities. All four priorities are also closely connected to reducing related risk factors and reinforcing disaster preparedness measures in order to respond effectively at all levels (UNISDR, 2005; Coppola, 2011).The Sendai framework, Hyogo and Yokohama strategy provide guidelines for international institutions and countries to use in reducing risks to disaster and for preparing to respond to disasters when they occur. The frameworks also serve as guidelines for international institutions to use whenever international interventions are required in a country (Sendai Framework, 2015).

It can be inferred from the above that the frameworks and strategies recommended by the UN are aimed at ensuring that risks are mitigated, eliminated or prevented. However, in the event that risk is unavoidable, it is important for countries vulnerable to hazards and events which can lead to disasters to embark on disaster risk reduction as a preparedness measure. This emphasizes the importance of capacity development, decentralized planning and community participation (UNISDR, 2014). The global strategies recommended by the UN indicate the significant role played by the UN in supporting countries across the world to be more proactive in emergency management. The next section examines the mechanism used by the European Union (EU) as a regional institution which develops, initiates and supports projects and policies that influence other countries in the world in the provision of emergency support.

2.3.2 EU – The Community Mechanism for Civil Protection

The European Union (EU) has several mechanisms and strategies to manage obligations towards European countries and countries outside of the region. The Community Mechanism for Civil Protection (CMCP) is a European Union Committee (EUC) established in 2001 whose main role is to facilitate co-operation in civil protection assistance interventions when urgent response actions are required for an emergency/disaster. The CMCP has established four tools through which it facilitates both adequate preparedness and effective response to disasters at a community level:

1. Monitoring Information Centre (MIC)
2. Common Emergency and Information System (CEIS)
3. Training programs
4. Civil protection modules (EU, 2014)

The MIC is the operation centre of CMCP, and gives participating countries (whether within or outside the EU) access to civil protection When a major disaster occurs, a country may appeal for help through the MIC, which acts as a communication hub between participating states and the affected country. It provides useful and updated information on the actual status of an on-going emergency and plays a coordinating role by matching offers of assistance from participating states to the needs of the disaster-affected country (EU, 2014).

The review of strategies, standards, guidelines, structures and plans used by the UN and EU has highlighted and emphasized the role of international organizations and their agencies, subsidiaries and commission in seeking solutions to disaster and emergency management problems. It also highlights the persistent problems that continue to plague emergency management across the world, although some countries seem to do better than others. This review has also emphasized the importance of preparedness, prevention and mitigation to reduce the impact of disaster and emergency on people and community. These pre-incident measures and phases are crucial for response to be effective or in order to be able to mitigate the impact of any emergency or disaster.

To evaluate the importance of preparedness and comprehensive emergency management standards, subsequent sections in this chapter will examine the application of phases of emergency management and standards or frameworks used in the US, UK, Australia and the UAE. The selection of these countries is based on the fact that the UAE has adapted the framework and standards they use to develop and influence its emergency management standards. Examining the standards used in these counties is also strategic in identifying gaps in the UAE EM arrangement and standards.

2.4 EMERGENCY MANAGEMENT STANDARDS IN DEVELOPED COUNTRIES

This section examines the national EM standards used in developed countries. Many developed countries figure significantly in the field of EM, countries such as Japan, Singapore, Germany, and Sweden to mention a few. However, this research uses the UK, US and Australian EM standards as parameters for identifying the gaps, problems and issues with

the UAE EM standards. The reason for choosing these countries out of all the countries in the world is because the UAE has already adapted emergency management standards from the UK and concepts of EM administration from the US, while there is an ongoing agreement on emergency management with Australia (NCEMA, 2013). In June 18, 2013, Australia and the UAE signed a Memorandum of Understanding (MOU) through the National Emergency Crisis and Disaster Management (NCEMA), the national emergency authority in the UAE. Before starting to explore the EM standards in the countries from which the UAE adopts its standard, it is important to examine the context of the four-phase approach as well as the principles of EM, as a means of understanding how the EM standard is applied in these countries.

2.4.1 Modern Emergency Management—A Four-Phase Approach

As briefly mentioned in Chapter 1 and previously in section 2.2, emergency management is a process which comprises four phases. These phases are explained as the comprehensive principle of EM which is widely used across the world for emergency management or disaster management (Coppola, 2011). These four distinct components are: mitigation, preparedness, response, and recovery. Although a wide range of terminology is often used to describe them, effective emergency management utilises each component in the following manner:

Mitigation: involves mitigating or eliminating either the likelihood or the consequences of a hazard, or both. Mitigation seeks to "treat" the hazard in such a way that it does not impact society to a higher degree. Mitigation involves structural and non-structural measures (Waugh and Tierney, 2007).

Preparedness: involves equipping people (the community) who may be impacted by a disaster and agencies and organisations that may be able to help those affected with the tools to optimise their chance of survival and to minimise any financial and other losses. This phase involves several stakeholders and thus has some essential elements which are designed to make the preparedness phase more result driven (Alexander, 2005). The preparedness phase is the focus of this research because it is critical for helping community, emergency agencies and organisations to be ready for any emergency (Dillon et al., 2009). It is also the focus of this research because it determines what is done during the response phase, so if the preparedness phase is inadequate, response to the emergency will also be inadequate or ineffective (Edwards and Goodrich, 2007).

Response: involves undertaking action to decrease or eliminate the impact of disasters which have occurred or are occurring so as to prevent further suffering, financial loss, or both combined. The term relief, commonly used in international emergency management, is one of the components of response. Organisation of this phase requires some level of skills and expertise because of the level of risk and danger that might be involved (Brito, 2012).
Recovery: involves returning the lives of those affected to a normal state after the impact and consequences of the disaster. This phase usually starts after the immediate response has come to an end, and can take months or years to complete (Coppola, 2011).

Thus, it can be inferred that these phases of emergency management influence the management of disaster events and emergencies. They also help to clarify the type and nature of activities which are undertaken at each phase in order to ensure that emergencies or disasters are effectively managed in the countries concerned. It can also be inferred that the four-phase approach; Mitigation, Preparedness, Response and Recovery are used to facilitate the context of emergency management standards across the world including countries such as the UK, US, Australia and UAE. These four phases also mean that emergency response personnel have specific responsibilities and roles they are required to perform in order to ensure that activities and actions of carried out in these phases are effective and translate to prevention of lives, environment and properties.

Roles of emergency response personnel: the phases of emergency management require that individuals or groups should directly facilitate actions (Edwards and Goodrich, 2007). Dillon et al. (2009) emphasized that the role of emergency response personnel is to commence emergency response actions which are based on laid out emergency procedures. However, Cabinet Office (2009) argued that for this to take place, emergency response personnel have a duty to assess risks, to develop and maintain plans, to communicate with the public, promote business and crisis continuity plans, share information, and cooperate with other responding agencies who can provide support during response to emergencies.

Therefore, this section has examined the phases of EM and roles of emergency response personnel which provide the foundation for and influence the current practice of EM as it relates to the principles of emergency management standards.

2.4.2 Principles of Emergency Management Standard

According to a work group composed of emergency management practitioners and academics at the US Federal Emergency Management Agency (FEMA) and emergency management institutes, there are eight principles acting as a base for EM standards (EMI, 2007). These principles are explained as follows:

- Comprehensive –ensuring that emergency managers take into consideration all hazards, all phases, all stakeholders and all impacts related to disasters. It means all phases of EM should be undertaken with consideration of any possible hazard, all stakeholders required and all possible impacts the can occur. This principle is not limited to just a phase or hazard nor does it limit its engagement to a single stakeholder.
- Progressive – emergency managers anticipate future disasters and undertake preventive, mitigating and preparatory measures for safer, disaster-resilient communities.
- Risk-driven – emergency managers use clear risk management principles in defining priorities and allocating resources. This principle is considered important in order to determine stakeholders and manage possible impacts.
- Integrated – emergency managers coordinate efforts at all levels of government, agencies, organisations and members of a community. This principle emphasizes that decisions on EM are not limited to government alone, but rather that they should involve community members. Although this principle does not define who the community members are, it suggests that integrated means all stakeholders, including community, who are being catered for in terms of safety.
- Collaborative – emergency managers build and sustain relationships and trust among organisations and individuals, advocate a team environment, and facilitate communication.
- Coordinated – emergency managers synchronise activities of all relevant stakeholders to reach a common objective.
- Flexible – emergency managers adopt creative and innovative approaches in order to face the challenges of disaster. It suggests that emergency managers can be creative in their approach to managing emergencies and disasters and not limit themselves to ineffective standards.

- Professional – emergency managers adopt a scientific approach, centered on education, training, experience, and continuous improvement.

These principles do not function without the guidance of the four phase approach of modern emergency management, as presented in section 2.4.1. This is because the phases of EM determine what type of activities emergency managers undertake, who they involve as stakeholders and what actions are necessary to ensure safety of lives. In a similar vein, the principles mentioned are described as characteristics of the emergency management standard, how this standard should be in terms, for example, of the comprehensive, and collaborative coordination of the standard. The four phases approach has been adopted by some countries for managing emergencies/disasters, and the next section uses them to examine the current emergency management standards and practices used in the US, UK and Australia, as well as how they are influencing emergency management practices in the UAE.

2.4.3 EM Standards in Developed Countries

This section examines emergency management standards used in the specified countries, while the aim of this sub-section is to achieve the first and second research objectives .This sub-sections will also provide an understanding of the relevance of the standards used in relation to threats, risks and hazards peculiar to each country.

a) The US Emergency Management Standard

- ***Development of the standard***

From a historical perspective, emergency management was considered only as a function of law enforcement and fire departments (Petak, 1985). According to Wilson and Oyola-Yemaiel (2001), today, the function of emergency management requires a full-time and continuous program to co-ordinate a wide range of resources, skills and techniques, and to reduce the likelihood and impact of disruptive events. This is arranged in such a way that when a disaster occurs, this function can bring about a quick response and recovery.

The profession of emergency management has undergone several changes in the US, with the 9/11 terrorist attacks and the disastrous hurricanes in 2005 influencing reviews of emergency management policies. Since its establishment in 1979, the Federal Emergency Management Agency (FEMA) has cooperated with all levels of government. However, the response to the

9/11 terrorists attacks revealed some deficiencies in the national response (Haddow et al 2011). This led to the creation of the Department of Homeland Security (DHS) in 2003 (Waugh and Streib 2006; Wise 2006). Previous coordination was made for several decades by FEMA, and the establishment of the DHS represents a change in organisation towards a homeland security function of Emergency management in the US in order to address organisational issues following the failure to respond effectively to the events of 9/11 (Wise 2006).

On December 17, 2003, the US president issued the Homeland Security Presidential Directive 8 (HSPD-8) which developed national policies to strengthen the preparedness of the United States. The national policies help to prevent, protect against, respond to, and recover from threatened or actual terrorist attacks, extreme disasters, and other emergencies within the United States. HSPD-8 directed the Secretary of Homeland Security to establish a national domestic all-hazards preparedness goal in coordination with the heads of other federal agencies and departments and in consultation with state, local, tribal, and territorial governments. Despite the DHS's authority and special powers, organisational problems surfaced in the response to Hurricane Katrina in 2005. The failure in the fulfilment of the "homeland security mission" to respond to major disaster was due to organisational issues related to planning and the management of inter-governmental relations (Wise 2006). In reviewing this standard it can be seen that since FEMA's establishment in 1979, US emergency management standards have been reviewed several times following disasters. Hence, the US emergency management standard created a number of frameworks and guidelines, which will be examined in the next section.

- ***Frameworks and guidelines***

US emergency management standardshave clearly undergone several changes following major disasters such as the 9/11 terrorists attacks and Hurricane Katrina in 2005, leading to the adoption of certain guidelines and frameworks such as the National Incident Management System (NIMS) and National Response Plan (NRP) (which in 2003 became the National Response Framework)(NRF) (Grote, 2012; FEMA, 2015). According to FEMA (2015) NIMS and NRP are both responses focused on improving incident management and response to any form of disaster. NIMS is intended to be used by the community, including individuals, families, communities, the private and non-profit sectors, faith-based organisations and local, state, tribal, territorial, insular area and Federal governments. It represents a proactive, systematic approach aiming to guide departments and agencies at all levels of government and

all community stakeholders to co-operate smoothly and manage incidents involving all threats and hazards, whatever the size, cause, location or complexity.

For NIMS to function effectively, the National Preparedness System (NPS) provides an incident management template in support of all five national planning frameworks (FEMA, 2015). The NPS outlines the process for all members of the community to progress their preparedness activities and achieve the National Preparedness Goal, released in September 2011. The National Preparedness Goal is, "a secure and resilient nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk" (FEMA, 2015). The National Preparedness Goal organizes the core capabilities of all stakeholders (emergency agencies and organisations, community, private, etc) into six core mission areas, namely:

1. Identifying and assessing risk: involves collecting recent and historical data on existing, potential and perceived threats and hazards. The result of these risk assessments form the basis for the remaining steps in the National Preparedness cycle (FEMA, 2015).
2. Estimating Capability Requirements: this is about determining the specific capabilities and activities appropriate to the identified risks, as some of the required capabilities may already exist and some may need to be developed or improved (FEMA, 2015). FEMA provides a list of core capabilities which relate to emergency preparedness.
3. Building and Sustaining Capabilities: this entails deciding upon the most appropriate method to use limited resources to build capabilities. According to FEMA (2015), the risk assessment can be used to prioritise resources to address the highest probability or highest consequence threats.
4. Planning to deliver capabilities: since preparedness involves and affects the entire community (FEMA, 2015), the aim of this part of the preparedness goal is to coordinate plans with other organisations which will be involved and affected by the risks that have been assessed (Alexander, 2002).
5. Validating Capabilities: this involves determining if the activities are working as intended. Validating capabilities involves participating in exercises, simulations and other activities which can help to identify gaps in the plans and capabilities (FEMA, 2015). This capability is crucial to monitoring progress made towards achieving the preparedness goal.

6. Reviewing and Updating: this involves regular review and update of all capabilities, resources and plans (FEMA, 2015); as risks and resources evolve, so do preparedness efforts (Edwards and Goodrich, 2007).

As outlined and explained in this section, the National Preparedness System (NPS) informs the NIMS and any response arrangement. This also means that lack of functions, problems and limitation at the preparedness phase will also transfer to the response phase. Therefore, the NPS is important in the US to ensure effective response to any type, scale and manner of emergencies or disasters. While the NPS is crucial, the six parts of the emergency preparedness goal are also important to help determine ahead of any emergency or disaster the capabilities to response.

Thus, the emergency management standard in the US operates based on capacity and availability of resources, skills and planning arrangements which can cover each jurisdiction. Assistance can be requested from a higher authority, however, to respond in the event of large scale disaster but if assistance is not requested for any reason, such as breakdown in communication, political issues, lack of information etc., there may be more causalities. The next section will highlight the types of hazards facing the US.

- ***Categories of hazards***

While some disasters in the US have attracted global attention because of their scale (Brito, 2012), different types of hazards have highlighted the need to improve preparedness goals, as emphasized by FEMA. In many cases problems have been caused by human error, limited resources, lack of communication or lack of adequate preparedness (Haddow et al., 2011; Bazerman, 2004). Despite the challenges of response to some disasters, emergency management standards have been helpful in managing these different types of hazards, as shown in table 2.2:

Table 2.2 Categories of Hazards in the US

Categories of Hazard	Description
Biological	Hazards originating from organisms such as viruses, parasites, seafood toxins, etc. (Smith, 2001)
Chemical	Chemicals occurring naturally such as radon gas or arsenic etc. or from industrial hazards

	such as nuclear emission, eg, Three Mile disaster (Smith, 2001)
Mechanical	Occurring from motor vehicles, aircraft etc.
Physical, natural or environmental	Naturally occurring hazards such as earthquakes, floods, tornadoes, mudslides, hurricanes, tsunamis, etc. (FEMA, 2015)
Complex or extreme hazard	Combination of hazards, such as snow causing road accidents (Perrow, 2011).

The importance of the four phases of emergency management, as identified in section 2.4.1, is emphasized through the description of hazards and the nature of emergencies/disasters occurring in the US. The four phases and the standard developed to define procedures, stakeholders and resources, provide a generic approach to managing all types of hazards in the US (Coppola, 2011; Perrow, 2011).

The mission of emergency management practice and standards in the US is facilitated by the federal authority, FEMA, but different jurisdictions take responsibility for the practices of mitigation, preparedness, response and recovery for the more prevalent hazards in their region. It is also the responsibility of local and state government to determine the most appropriate level of participation from government, private sector, community and or nongovernmental organization required for each phase of emergency management. This decision is a capabilities-based arrangement and aimed at improving preparedness for all types of hazards regardless of their scale (Perrow, 2011). As explained in the NPS, preparedness is the responsibility of every level of government, every department, and every agency in collaboration with its authorities. This includes the coordination of preparedness activities among partners working within their jurisdictional borders, and everyone that might be required for planning or who might be affected by the impact of the hazard and risk identified and assessed (IAEM, 2013).

Although all phases are important, the impact of previous hazards in the US has emphasized the need for better preparedness in ensuring that the EM framework draws from the comprehensive, collaborative and coordinated principles of EM, to include the relevant stakeholders at all levels in any phase of support required. Due to the diversity of nationalities and cultures in some states in the US, many emergency preparedness arrangement plans

include community, faith-based, and other non-governmental organisations. This integration includes involving organisations in the planning process, providing adequate training and credentialing of their personnel, providing resource support for involvement in joint working, and facilitating the participation of the organisations in training and exercise (FEMA, 2012).

The development of mechanisms for coordination of the volunteers, goods, and services available through these organisations is also of fundamental importance. All these approaches use the integrated, collaborative, comprehensive and coordinated principles of EM without much consideration for progressive, risk-driven and flexible principles. It is clear that the elements of preparedness most prominent in the framework used in the US are planning (McEntire, 2004), training, exercise, organize, equip, evaluate and improve (Canton, 2007; FEMA, 2012). Most would consider today's US emergency management system among the most advanced in the world, in terms of equipment and systems used, training and funding. It is, in some ways, a model for emergency management in other countries (McEntire, 2001).

However, and in spite of the obvious continuous review of the EM system in the US, systemic failures are still occurring. Although not directly as a result of the four phases, these failures are more about the application or lack of application of the components of the phases. Furthermore, although emergency management standards are as old as emergency and disaster management practice in the US, the National Preparedness goals were only released in September 2011 However it is commendable that while several efforts were made to directly improve response through the NIMS, NRP and NRF frameworks, it was realized that national preparedness systems were more essential in reducing the impact of disasters or emergencies from the planning stage. This led to prioritizing the preparedness phase and the components and elements of emergency preparedness. It also emphases the importance of this research aim, which seeks to evaluate and "investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government in order to strategically improve the current level of emergency preparedness in the UAE."

b) The UK Emergency Management Standard

- ***Development of standard***

According to O'Brien and Read (2005), in the UK, the *Civil Defence Act (CDA)* of 1948 came in the aftermath of World War II, representing a major influence in the evolution of emergency management. Emergency management in the UK developed in a complex way

with planning for and dealing with emergencies very much a local function. The UK central government gave powers to local agencies to deal with emergencies. Although local councils were able to use regional and national resources only via a designated government department, the actual planning and execution of emergency activities at local level. This approach was the hallmark of UK emergency management until the 1980s (Hills, 1994). Smith (2003) also notes that this system, where government departments co-ordinate and local services plan and undertake operations on the ground, was in place until the end of the last millennium.

Following the Millennium Bug experience, where many government departments were constrained due to lack of formal powers to require information or action (Beckett, 2000), in 2001, lead responsibility was given to the new Civil Contingencies Secretariat (CCS) within the Cabinet Office, and the government launched a consultation in order to review the existing framework. The resulting reforms addressed the hierarchical structure that typifies a command and control approach, and established a national, regional and local framework. This framework aimed to facilitate in anticipation and response to a range of threats based on coordination and cooperation through a multi-agency coordination (O'Brien and Read, 2005). As with the US, this shows that the UK's emergency management is gradually developing, affected by previous disasters, learning lessons from past disasters and acting on feedback to create a strong EM system.

As Alexander (2002) observes, in the aftermath of disasters, political support for change is likely to be the strongest. Therefore, the new concept of emergency management following the reforms in 2004 was the Civil Contingencies Act (CCA) and the statutory guidance accompanying it. The Cabinet Office (2012) has published two volumes of guidance concerning preparedness on the one hand and response and recovery on the other. While volume one deals with the risk management process and related procedures, volume two covers Emergency Response and Recovery which describes how emergency agencies or organisations (multi-agency) respond to and recover from civil emergencies in the UK (Cabinet office, 2012).The guidance on response and recovery focuses on roles and duties of the stakeholders, category 1 and 2 responders within the multi-agency coordination and collaboration. This guidance targets all personnel likely to be involved in emergencies, in particular those at senior level, aiming for a shared understanding of multi-agency response and recovery across responding agencies (Cabinet Office, 2012). By doing so, it develops a shared understanding of the multi-agency duties, responsibilities and missions. The UK

framework as explained here reflects one which maximizes the comprehensive, integrated, coordinated, collaborative and risk-driven principle of EM as well as emphasizing the essential elements of risk assessment in ensuring good preparedness (Dillon et al. 2014). In order to understand how this standard is implanted the next section will examine the type of approach adopted in the UK.

- ***The Approach***

The United Kingdom's approach to preparation, response and recovery is based on the six activities of Integrated Emergency Management (IEM) (Cabinet Office 2010): anticipation, assessment, prevention, preparation, response and recovery. UK emergency management is also based on an all-hazards or comprehensive approach that encompasses response, recovery, mitigation and preparedness (McEntire et al., 2001). The aim of the all-hazards approach is to reduce risk from civil, natural, technological, biological and instrumental disruptions (O'Brien and O'Keefe, 2004).This shows that the risk assessment is an essential element in emergency preparedness in the UK because it is vital to building preparedness, response and recovery efforts using the risk-driven principle of EM (Alexander, 2009). The UK's approach to emergency response and recovery is founded on the engagement with appropriate stakeholders determining response and recovery efforts (Cabinet Office 2010).

A new concept which emerged in 2004 as the Contingencies Secretariat - which leads the reforms in the UK - mapped out a clearer intention to implement a legislative and capacity building programme known as UK resilience (UK Resilience, 2014). Resilience is a term increasingly used in reference to both civil society and the emergency services and is defined by the Civil Contingencies Secretariat as: "the ability at every level to detect, prevent, prepare for and if necessary handle and recover from disruptive challenges" (Great Britain Cabinet Office Civil Contingencies Secretariat, 2004:p-1). It can be inferred that the introduction of resilience as part of the working guide to plan for emergencies reflects the incorporation of flexible and progressive principles of EM to the already existing principles. Resilience is also geared towards ensuring that the level of responsibilities for managing emergencies improves (Cabinet office, 2011). Having identified the approach and concept of the UK's emergency management standard, the next section discusses how this approach works through roles and duties.

- ***Role and duties***

In providing resources and co-ordination, central government and the devolved administrations support and supplement efforts of local responders. Through the tiered structure, the central and sub-national tiers are only involved in emergency response and recovery where it is deemed necessary or helpful, but it remains crucial that the contributions of respective organisations are integrated where needed (Cabinet office, 2013:10). The CCA stipulates that in the case of rapid onset emergencies within a limited geographical area, the emergency management framework operates in a bottom-up fashion. However, if the event escalates (in severity or geographical area), it may be necessary to implement tactical or strategic level. In situations such as wide area or slow onset emergencies, the response may be led through initiatives by the central government or by the sub-national tier (Cabinet office, 2013:33).

As far as cooperation between agencies is concerned, emergency response and recovery as a multi-agency activity brings together a wide range of organisations which are not bound by hierarchical relationships. Even if one agency may take the lead in relation to an emergency, or an aspect or a phase of that emergency, the decision-making processes should always aim at being inclusive and, wherever possible, arriving at consensual decisions (Cabinet office, 2013:13). The Cabinet Office (2013) also distinguishes the levels of command, control and coordination between the respective functions performed by single and multi-agency groups.

According to the Cabinet Office (2013), the levels of command, control and coordination are defined between emergency agencies based on the type of emergencies being responded to. All types of emergencies in the UK can either be managed by a single emergency agency (single agency) or through the combined efforts of many emergency agencies (multi-agency). Regardless of single agency or multi-agency response, all responses are expected to be based on strategy, objectives and directed in a coordinated fashion so that the objectives will be reached (Cabinet office, 2013:33).Therefore, it can be concluded that the UK standard and framework is one which is flexible enough to allow the local authorities to operate at the required level of emergency management, yet structured with the required level of professionalism through collaborative working. The next section will highlight the categories of emergencies faced the UK.

- ***Categories of hazards***

Although the UK has not experienced as many large scale disasters as the US, the country has had its share of major emergencies, such as mass flooding in 2000, foot and mouth disease in

2001, and summer floods in 2007, to name but a few. The impact of emergencies such as the summer floods in 2007 led to the Pitt review, which provided some recommendations specifically for better managing floods in the future. Although these recommendations are good for response to floods, they provide limited information about preparedness, since the problems in this case were with response rather than preparation. However, emergencies in the UK are classified into categories (Cabinet Office, 2013) which are listed in Table 2.3:

Table 2.3 Categories of Emergencies in the UK

Categories of Hazards	Description
Severe weather	Severe weather include storms, extreme winter weather, droughts and heatwaves, causing significant disruption and damage (Cabinet Office, 2013; CCA, 2004)
Flooding	The 2007 summer floods showed that flooding can take different forms, such as coastal and inland flooding, flash flooding and even dam collapse or failure any of which may have significant impact (Cabinet Office, 2013)
Human Disease	A serious epidemic such as the influenza pandemic or SARS can cause loss of lives and have significant impact(Cabinet Office, 2013; CCA, 2004)
Animal Disease	Foot & mouth and avian influenza (bird flu) are notable diseases which have had a major impact in UK(Cabinet Office, 2013; CCA, 2004)
Major industrial accidents	Industrial accidents such as the Buncefield explosion have had short and long-term impacts on people, organisations and the environment(Cabinet Office, 2013)
Major transport accidents	There have been multiple road collisions which have caused severe disruptions and deaths (Cabinet Office, 2013)
Terrorism	The UK faces serious and continued terrorist threats. Terrorism can cause large scale casualties through Chemical, Biological, Radiological and Nuclear (CBRN) attacks (Cabinet Office, 2013; CCA, 2004)

The National Risk Register provides an assessment of most of the significant emergencies in the UK, particularly those which may cause disruption over the next five years (CCA, 2004). There are also community risk registers which focus more on specific geographical or local resilience forum areas (CCA, 2004). Crisis, emergency, major incident or disaster are many different words used to describe scales of events which have caused disruptions and loss of lives in the UK. Due to the impacts of these unfortunate events, as briefly explained in Table 2.3 and many others, emergency planning became prominent in the UK emergency management standard (Dillon et al, 2009). As in the US, these series of unfortunate events have informed the application and continued review of an emergency preparedness cycle

which is examined in detail in the next chapter. The UK emergency management standard also emphasized the relevance of resilience: the ability to resist, cope with and recover quickly from the impact of unfavourable events (Cutter et al., 2008).

This detailed evaluation of the UK emergency management standard provides understanding of the standard adopted by the UAE, as well as emphasizing the relevance and importance of the emergency preparedness phase. However, information about the UK standard will certainly help to assess the UAE emergency management standard in general and the preparedness phase in particular.

c) The Australian Emergency Management Standard

- ***Development of the standard***

Like the US and UK, the concept of emergency management has existed for many years in Australia. However, significant events in its history have led to a change in the focus of the States' emergency management system and function as well as in the way Australia as a nation deals with emergencies. Certainly, it has emphasized the importance of the preparedness phase in order to deal better with emergencies (Government of Western Australia, 2012). Since the late 1990s, there has been a shift in the emergency-management policy from an internal agency focus to a community focus, and consequently from strategies based on a reactive response to a more proactive risk-management approach. These developments were based on a gradual change from considering hazards alone to considering vulnerability and risk. The main concern is with the interaction between the community and the hazards rather than the physical nature of the hazard (Crondstedt, 2002). The reason behind these changes is "equally applicable to organisations as it is to community emergency management" (Australian OHS Education Accreditation Board, 2012). It can therefore be inferred that since emergency response in Australia requires pre-planning, the risk management methodology standard in Australia can be considered as a shift away from a reactive, response-driven approach towards a risk management approach.

In addition, one of the most significant changes to emergency management in Australia was the implementation of the *Emergency Management Act 2005* (Government of Western Australia, 2012, p-13). The Act establishes the current State Emergency Management Committee (SEMC) and the policy and framework that supports all aspects of emergency management Prevention, Preparedness, Response and Recovery (PPRR) (EMA, 1998). It can be seen, therefore, that the Australian emergency management standard developed gradually,

influenced by previous disasters, and that the Australia standard has adopted a four phase approach of PPRR. The next sections will examine in detail this four phases approach, the legal and administrative framework, the approach adopted in Australia, and the categories of emergencies**.**

- ***Four phase approach***

Although given the name PPRR, the principles and framework of EM in Australia originated in the US (Crondstedt, 2002). They have been somewhat adapted with the replacement of mitigation by prevention, although mitigation often appears as part of prevention (Crondstedt, 2002).The Comprehensive Approach, one of the essential concepts of the emergency management system in Australia, is composed of four phases: prevention, preparedness, response and recovery. It is defined in the Australian Emergency Management Glossary as: "The development of emergency and disaster arrangements to embrace the aspects of *PPRR*" (EMA, 1998:24).

The purpose of the four phase approach is for multiple agencies and organisations at all levels of government to work together with the community to limit loss and damage and to increase resilience. Therefore, emergency management policies and programs contribute to one goal, which is to build a safer, sustainable community, helping to ensure that all citizens can safely live, work and meet their appropriate needs in a sustainable social and physical environment (Emergency Management Australia, 2004:3).

- ***Legal and administrative framework***

Under constitutional arrangements in Australia, state and territorial governments have responsibility for emergency management within their respective jurisdictions. Nevertheless, Australia's emergency management arrangements are rather based on "partnerships between the Commonwealth; state, territorial and local governments; business and industry; and the community." The aim of such partnerships is to decrease vulnerability to hazards and protect lives, properties, and the environment, to mitigate adverse impacts during emergencies and facilitate recovery (The Commonwealth of Australia, 2009:7). Under the Australian constitutional arrangements, this ensures that every region has responsibility to prepare for the emergences within their jurisdiction. This is done through partnership between all levels of government and the community in order to protect their community; an approach which is crucial to this research aim.

- ***Approach***

Based on constitutional arrangements in Australia, the country has adopted a comprehensive and integrated approach to the management of emergencies and disasters (The Commonwealth of Australia, 2009). The EM standard, principles and approaches used reinforce collaborative and coordinated principles of better preparedness, and EM in general - for more information see section 2.4.2. Despite the change from mitigation to prevention, the consistency of the approach used illustrates the attempt to minimize confusion in policies and approach and to make clear the importance of having a "prepared community" for any form of disaster (Crondstedt, 2002).

Comprehensive: as implied in the principles of EM, comprehensive suggests encompassing all hazards with a range of activities to prevent, prepare for, respond to and recover from any emergency so as to deal with risks to community. This approach is also based on risk-driven principles as well as influencing preparedness activities by EMA (Crondstedt, 2002). The reference to community and all necessary stakeholders in this approach also suggests a focus on involving community in emergency management activities and approach. The combination of comprehensive and integrated approaches ensures that PPRR works more effectively (EMA, 1998).

Integrated: it creates a platform to coordinate the activities of government, all the relevant agencies and organisations, private sector and the community within a multi-agency approach. The goal of all these arrangements is to contribute to the management of a disaster and the maintenance of an emergency-ready Australian community. The integrated approach suggests that elements such as information, community or public education, and mutual agreements between all emergency agencies and community are important (Crondstedt, 2002). The integrated approach is also a tiered approach to emergency management with local authorities at the first level of response, supported by state and national authorities if the capacities of the local government are overwhelmed (EMA, 1998). Responsibility for emergency management at local level lies with the emergency services and other agencies. State and local resources also provide the first line of emergency response and incident management support (Emergency Management Australia 2004).

In the case of large scale and complex emergencies, states and territories are given the option to request assistance from other territories or states, or from the government, where necessary (Emergency Management Australia 2004:3). In addition to local authorities, all states and

territories work in collaboration with volunteer-based organisations which may be able to provide initial support in the case of emergencies. A number of government agencies and non-government organisations also provide assistance and aid during emergencies (Australian OHS Education Accreditation Board, 2012). For catastrophic level disasters, enhanced national coordination and assistance may be provided as assistance arrangements are made by some of the function and hazard-specific national plans such as the National Action Plan for Human Influenza Pandemic and the Australian Veterinary Emergency Management Plan (Australian OHS Education Accreditation Board, 2012).

This comprehensive and integrated approach adopted by Australian government enables all stakeholders, government and non-government organizations, as well as the community, to participate in preparation and response to emergencies threatening Australia. The next section will highlight the categories of such emergencies.

- ***Categories of hazards***

Australia is a country which is plagued annually with incidents which cause disruption to lives and property. The categories of hazards in Australia provided by the EMA (1998) are shown in Table 2.4:

Table 2.4 Types of Hazards in Australia

Categories of Hazards	Description
Biodiversity	This is used to describe the number and variety of organisms found in a geographical area. Many insects destroy plants, vegetables and fruits in Australia, so there are strict regulations on fruits and organic materials being brought into the country from other countries.
Fire (wild bush fire)	There are annual bushfires in Australia which have significant impact, both to property and financially
Floods	Flooding is also a common occurrence in Australia
Civil/Political hazards	Terrorism, organised crime (smuggling of goods and illegal immigrants), civil unrest, hostage situations, sabotage
Technological hazards	Technical system failure in industrial sites, infrastructure or transportation
Natural hazards	Cyclone, flood, tsunami, mudslide, earthquake, avalanche, volcanic eruption, drought (EMA, 1998)

As seen in Table 2.4, hazards are both natural and man-made and since they occur regularly, the EM standard in Australia focuses on community awareness and education as a means of mitigation or prevention (EMA, 1998). It also places emphasis on prevention and preparedness, and many of the educational programs to educate and provide awareness for community and people who might be affected focus on leadership, business continuity, exercising and coordination and organisational resilience (EMA, 1998). Understanding of the EM standards in Australia, the educational programs which help to prepare communities for disasters and hazard events, and preparedness programs which focus on leadership and organizational resilience for the public, will be helpful in examining the UAE standard.

Having reviewed emergency management standards of these developed countries, three main points stand out: firstly, that they have implemented the four phase approach mentioned in section 2.4.1, as well as the principles of emergency management mentioned in section 2.4.2. Secondly, that they have developed different frameworks and guidelines for their standards. For instance, the US has created frameworks like the National Preparedness System (NPS), National Incident Management System (NIMS), and National Response Plan (NRP). Under the Civil Contingency Act 2004 the UK has created integrated emergency management consisting of six related activities: anticipation, assessment, prevention, preparation, response and recovery. The first four activities fall under preparedness, and the second two as respond and recover, while Australia, under the Emergency Management Act 2005, has adopted a comprehensive and integrated approach with the replacement of mitigation with prevention - familiar as PPRR. The third point is that all these countries consider preparedness as a priority because there is no good response without good preparedness. The UAE has adopted the UK standard and works in partnership with the US and Australia, a fact which will help to explore and identify gaps in the UAE emergency management standard. With this in mind, the next section will examine the UAE's emergency management standard in general and preparedness in particular.

2.5 EMERGENCY MANAGEMENT STANDARD IN THE UAE

As with the developed countries already discussed, the UAE also face crises, disasters and emergency events such as cyclones, sandstorms, flooding, earthquake, tsunami, tropical storms, plane crashes, road accidents and fire, which have resulted in death and major destruction of property, and insurance claims (NCEMA 2014; Mahoney, 2013). Although the UAE is susceptible to disasters, a search of the literature reveals almost nothing on the subject

of emergency management. Therefore, this section examines existing standards for coping with emergencies in the UAE using the available literature. While there are limited documented materials to review, information from the National Crisis and Emergency Management Authority (NCEMA) was examined, as well as from the UK, given that the UAE adapted the CCA for developing an emergency management framework. The limited literature concerning the UAE emergency system may be due to the fact that the country is in its infancy in this field.

Before 2007, the organisation responsible for dealing with emergency situations in the United Arab Emirates was the Ministry of Interior. At the beginning of the 1990s, emergency management in the UAE was limited and lacking in any form of emergency plan (Dhanhani, 2010). It was not until 2007 – the year of tropical storm Gonu (as seen in figure 1.2 chapter one) – that an organisation was set up specifically to deal with the management of emergency and crisis situations. This decision was made against a background of the UAE sending personnel to countries such as the UK and US to be trained and tutored, and indeed these were the countries upon whose emergency management systems the UAE modelled itself (NCEMA, 2012).

An increased level of awareness with respect to natural disasters and the changing needs of a fast-developing nation led to the creation of the National Crisis and Emergency Management Authority (NCEMA). Governed by the Higher National Security Council (HNSC), NCEMA's aims are to: "ensure the safety of the lives of all citizens and residents in the territory of the United Arab Emirates, to preserve the property of the country and to enhance the UAE's capabilities in managing crisis and emergencies by: setting the requirements of business continuity, enabling quick recovery through joint planning, and coordinating communication both at the national and local level" (NCEMA, 2012). With the setting up of NCEMA, a National Response Framework (NRF) was developed, as well as procedures for training and auditing all emergency management related activities (NCEMA, 2012). National, regional and local operation centers were established to ensure the response of all UAE organisations involved in emergency management through periodic training and exercise (NCEMA, 2012). This framework will be addressed in detail in chapter 5. While all the above indicates the presence of good emergency management standards and response arrangements, there are no links to or emphasis on the preparedness phase, as indicated in the US, UK and Australian standards.

2.5.1 NCEMA Goals and Objectives

Under the Higher National Security Council (HNSC), which comprises the President, various Emirate leaders, Supreme Commander of the Armed Forces, and various other agency heads, NCEMA leads response at national, regional and local levels (NCEMA, 2012).Its stated goals and objectives are as follows:

1) To compose a unified federal emergency law governing the management of national emergencies, developing a National Response Plan (NRP).
2) To establish a national emergency command centre for coordination and management of all capabilities and resources at national level.
3) To establish a national crisis and emergency command and control as the executing part of the NCEMA, with responsibility to manage national capabilities and resources and coordinate between all parties involved.
4) To ensure preparedness of all organisations involved in the management of emergency and crisis by conducting periodic training and exercises.
5) To organise an annual conference for international crisis and emergency management, aimed at raising awareness and improving performance and effectiveness of emergency response efforts and capabilities.
6) To establish a national crisis and emergency college responsible for establishing national definitions and standards of crisis and emergency related concepts, ensuring integration, collaboration and correct coordination between all related parties and organisations. To conduct training and research, develop improved communication, and raise public awareness for matters related to crisis and emergency management (NCEMA, 2012).

While NCEMA's objectives and goals are good and robust, only objective/goal 4) mentions preparedness, with other objectives dedicated to response and having unified response plans and organizations. Even the fourth objective/goal fails to make reference to how the preparedness of all organisations will be achieved, as seen in the US and UK standards. Nor does the preparedness include the affected community, stakeholders and the public, as emphasized in the US, UK and Australian EM standards and emergency preparedness systems or frameworks.

2.5.2 The Structure of the UAE Emergency Management Standard

As mentioned above, the NCEMA was established in 2007, with its main aim to coordinate the efforts of all the stakeholders within the seven Emirates in any emergency situation. With this in mind, the UAE's EM standard has two levels: federal and local (NCEMA, 2013).

a. Federal level

NECMA's head office in Abu Dhabi is responsible for the assessment of hazards, the making of plans, training and exercise, etc, at the federal level, ie, for preparing and coping with disaster at the federal level. However, the federal level is not involved in coping with disaster unless an event escalates to levels one or two as discussed in this section. That means that if the local level cannot cope with the event then assistance from federal government is required. This is similar to the approach taken in the US, UK and Australia. Therefore, the leadership at federal level is the responsibility of the NCEMA. Figure 2.1 shows the structure at Federal level (NCEMA, 2007).

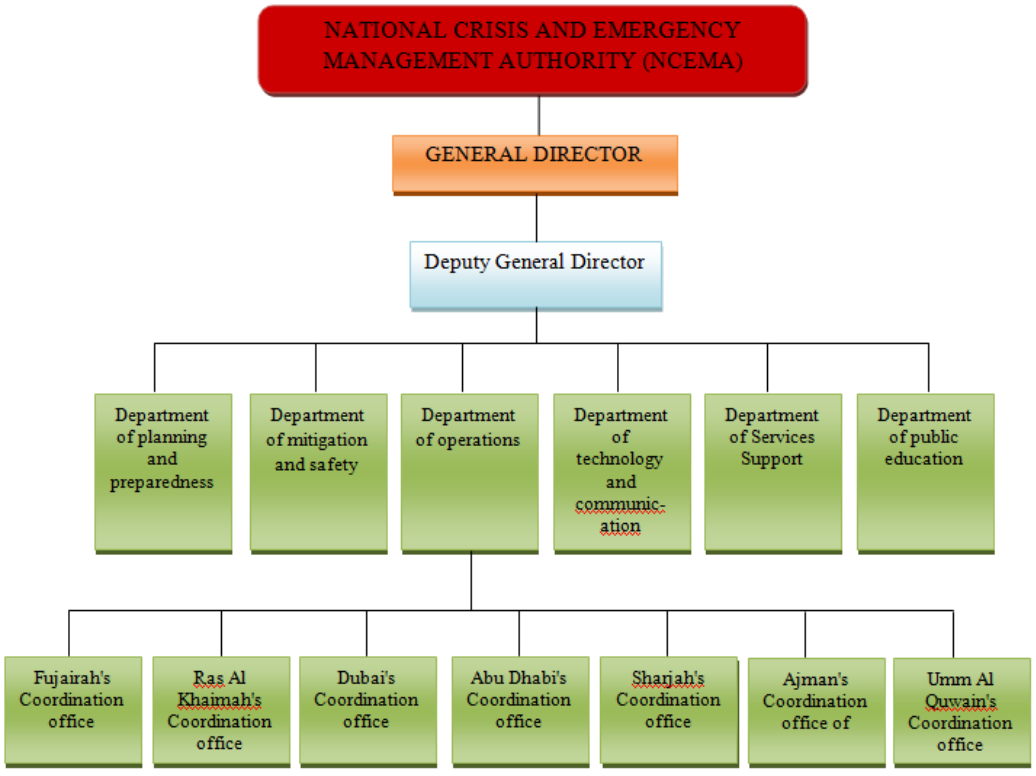


Figure 2.1Organisation Structure for the NCEMA (NCEMA, 2007)

This structure shows a centralised system, which is divided into different departments to facilitate operations. While this structure and subsection offices in the seven emirates shows good division of operations, it can also make operations, communication and coordination

challenging if there is lacking or limited communication and understanding of functions (Canton, 2007).

In addition, the NCEMA has branches in each Emirate, the aim of which is to ensure coordination between the federal and local government. This approach is similar to the approach taken in the US, UK and Australia as explained through the integrated principle of EM. The characteristics for the federal level are as follows:

- It is responsible for preparing for and coping with disasters at federal level.
- It does not become involved in coping with disaster unless the event escalates to level two or one.
- The federal level is under the leadership of the federal government (NCEMA, 2012).

Having looked at the structure and the main characteristics of the federal level based on the duties and responsibilities, the next section will highlight the main characteristics and duties at local level and how this level is managed.

b. local level

Local level has been under local government leadership since National Security asked the local authorities in each Emirate to set up a crisis and disaster management team headed by the high commander of each Emirate's police force. The mission of this team is to deal with any type of disaster at local level (Level 4 and 3). The mission includes the creation of a risk register for the Emirate and responsibility for planning, training and exercise (NCEMA, 2012). The reshuffle of the body was proposed early in 2011 by decision No: 18/201 and was approved at a meeting chaired by H.H. Sheikh Sultan bin Mohammed bin Sultan Al Qasimi, crown prince and deputy ruler of Sharjah, who is also the head of the Council. This team includes representatives of the local Director of the NCEMA, Civil Defense, the state Security, the UAE Armed Forces, and the other local and federal authorities and departments. Any relevant private sector organization may also be permanent or temporary members of the team (WAM, 2011). The representatives are shown in figure 2.2.

Figure 2.2 Organisation Structure for the LEMT (2007,LEMT)

The structure of the Local Emergency Management Team (LEMT) shows that while the team leader takes the lead for response operations, other emergency agencies are all coordinated by a deputy manager. Thus, while NCEMA is the federal authority for emergency management, during emergency response, the police play a central role in managing crisis, emergencies and disasters. However, it is unclear how prevention, preparedness and recovery efforts are coordinated, although it is clear that the response is led by the police and not NCEMA.

The characteristics of the local level are:

- It is responsible for preparing and coping with disasters at local level.
- The first response for any disaster may occur at this level.

The local level falls under the leadership of local government (NCEMA, 2012).

Having explained the structures of both levels of NCEMA and how these levels work, it is worthwhile showing how they work based on the command standard.

2.5.3 Command Structure

The NCEMA was established by a presidential decree which determined its duties and responsibilities in the process of emergency management and preparedness. It has branches and offices in the seven emirates. The UAE has also adopted the Gold-Silver-Bronze (GSB) command structure existing in the document written by the National Policing Improvement Agency (NPIA, 2009), but the GSB is derived from the command and control principle of the Incident Command System (ICS) which originated in the US. Figure 2.3 below shows the command structure:

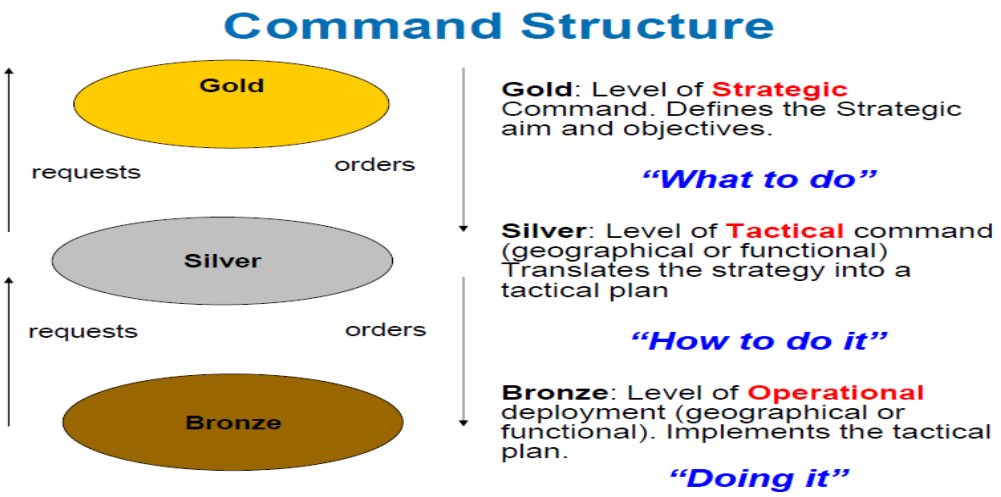


Figure 2.3 Command Structure Source: Emergency Planning College (EPC, 2015).

This command structure is adopted from the British standard which was published on the UK Government website in 2008. The diagram shows three levels of command: gold, silver and bronze (EPC, 2015). These three levels show good division of emergency operations, decisions, communication and management by Gold, where, what to do is decided based on the information provided by Bronze, which further receives decisions on what to do. The next section will explain in detail these levels of command, starting with gold level.

A. Gold level

It is the level of strategic planning according to the size of the disaster. At this level, commanders design strategic plans about resources and provide guidelines and instructions regarding the role and responsibilities of the institutions involved (EPC, 2015). These instructions are also used by the operational level commanders in order to implement the plans. The strategic commanders design strategic plans and follow up the management of the disaster as a whole (NCEMA, 2012).

B. Silver level

It is the level at which commanders transform the strategies and instructions into plans that can be implemented, and give instructions on how to implement them. During the management of the disaster, the tactical commanders provide instructions to the operational level commanders and follow up their implementation. The focus at this level is on plans rather than operations (EPC, 2015).

C. Bronze level

At this level, commanders implement the plans and instructions received from the upper level of tactical commanders. The role of the bronze level commanders during all the stages of the management of a disaster is to manage the use of resources in the operations for the treatment of the hazard.

The GSB is therefore an incident management model to ensure that there is little or minimal confusion of operations between all the organisations, i.e., multi-agency organisations working to manage the emergency. This means that it is not only NCEMA that responds to crisis, emergency or disaster events in the UAE; other organisations include the police, civil defense and the Red Crescent who all work together when required to prevent incidents from escalating and ensuring that lives are saved (NCEMA, 2012).

Having identified the command structure of the UAE emergency management standard, the next section will illustrate the levels of responsibility adopted in the UAE's emergency management standard, i.e., when the federal government should intervene.

2.5.4 Levels of Responsibility and Intervention

The role of NCEMA differs from one level to another depending on the category of disaster, which relate to its size and severity. As a result, there are four levels adopted in the UAE which serve as a standard to manage any disruptive event which escalates into a disaster, from 4 to 1(NCEMA, 2012).In order to understand clearly how these levels work the next sections will explain them in detail, starting with level four:

A. Level Four

If any disaster happens in any part of the UAE that can be tackled by local resources and capabilities, then the management of this disaster will be at local level and with local resources. The mission of the NCEMA branch in this case is simply to observe and coordinate efforts and transfer information between local and federal levels (NCEMA), and in order to raise the level of management to the next one if necessary, here for example from level 4 to 3.

B. Level Three

If any disaster happens in any part of the UAE that can be tackled using neighbouring city or federal resources and capabilities, management of the disaster will still be at local level and

with federal resources. The mission of the NCEMA branch in the affected Emirate in this case is simply to coordinate the efforts and transfer information between the local level and the NCEMA head office in Abu Dhabi in order to raise the level of management if necessary, here for example from level 3 to 2.

C. Level Two

This refers to any emergency which is difficult to manage by the local authorities or with the help of another Emirate. It is the type of disaster with serious consequences which will take a long time to deal with and which will require collaboration between local, state and federal authorities and institutions. The disaster is managed in the national operations room by the federal authorities. The national crisis and emergency management team is composed by virtue of a decision by the head of the council of National Security.

D. Level One

The management of a disaster is raised to level one if the disaster has large-scale consequences and requires a direct intervention at national level. This type of disaster is managed by the federal government from its central operations room. The national crisis management team is formed by virtue of a decision of the head of the high council of National Security. (NCEMA, 2011)

From the above it can be therefore concluded that the UAE's emergency management standard is similar in principle to the other countries reviewed, but does not place emphasis on the preparedness phase as essential. It seems there is more focus on response framework in the UAE, contrary to the other countries. Therefore, in practice, it can be inferred that there is deficiency in the system which does not reflect the application of the standard adopted and concepts learnt from other countries. The standard also fails to make reference to the influence of previous disasters on the emergency preparedness phase in the UAE, as seen in the lack of emphasis on preparedness.

In addition, the literature shows that there is an emergency management standard implemented in the United Arab Emirates and that this is adopted from the UK with slight changes; however there is no standard in the emergency preparedness framework. Also, there are no academic studies about the work of UAE government bodies in the field of emergency management; according to Dhanhani (2010), no studies are being carried out – with the

exception of those concerning earthquakes – regarding natural hazards in the UAE (eg, floods, landslides). This may be because the field of emergency management in the UAE is still in its infancy, whereas the three developed countries have long-established emergency management standards, and having learnt from mistakes in previous disasters, have reached an advanced level. In addition, there is no reference to community as seen in the Australian EM concept, and the UAE EM standard fails to explain any stakeholder or public involvement in emergency preparedness as seen in the US and the UK. Nor is any reference made to resilience, as in the UK and Australia.

it can be seen that the UAE has good emergency management structure, organisation and systems which guide its emergency management operations, and that many of the emergency management principles are similar to the UK and US.

To further highlight the gaps outlined above, the next section provides a summary of all emergency standards examined so far, including the deficiencies and areas which require further investigation, particularly in the UAE EM system.

2.6 A summary of Emergency Management Standards

A. Approach

By examining the various approaches and standards of EM, distinct similarities between the principles of emergency management used in the US, UK and Australia emerge. All three follow, roughly:

- The Comprehensive Approach: which includes the Mitigation/Prevention Preparedness, Response and Recover. These are not separate linear segments, independent of each other, but rather can overlap and run concurrently. As examined, it can also be seen that the UAE emergency management is modelled after this comprehensive approach under the direction and management of NCEMA.
- The All Hazards Approach: working on the basis that many risks cause similar outcomes requiring similar responses; this approach involves managing a wide range of possible crisis outcomes (FEMA, 2007). Although NCEMA was only established less than a decade ago, the authority has been quick to learn that any risks cause significant impact on the public. Although the UAE has not experienced large scale disasters like the US, UK and Australia, having offices in all the seven emirates to

promptly identify new threats, hazards and crises suggests a structure that is progressive, which is one of the principles of EM.

- The Integrated/All Agencies Approach: which includes the involvement of government agencies such as local councils, emergency services such as police, fire, ambulance, as well as NGOs such as local community groups and volunteer organizations (FEMA, 2007).This is also evident from the operational procedures used by NCEMA and all emergency agencies in the UAE. Although NCEMA is still lacking in engaging the community in emergency management activities, it is envisaged that through this research and many others, an emergency standard will evolve which is more engaging in terms of involvement with the community and the public.

Other similarities can be seen between Australia and the US. For example, the US has the National Inter-agency Incident Management System (NIMS) (US Environmental Protection Agency, 2011), and Australia has the Australian Inter-service Incident Management System (AIIMS) (Conway, 2012). Both have been created to coordinate inter-agency response operations, and to have a robust preparedness cycle and frameworks, helping these response systems to function effectively. However, it seems that the UAE has replicated the approaches used in these countries without experiencing the incidents which have triggered the changes in approach in other countries. Having said this, the continued reference to the preparedness phase in the US, UK and Australia EM standards have helped to identify the possible gaps in the UAE system. There is no reference to the preparedness phase in the UAE being enhanced, improved or changed based on the response to previous challenges or disasters.

B. Phases

Emergency management is often defined in terms of "phases.", a concept used to help describe and comprehend disasters, and to help organise the practice of emergency management. The US process of emergency management involves four phases: prevention (or mitigation), preparedness, response, and recovery or rehabilitation (Green, 2002; Waugh, 2000; Godschalk, 1991). Such terms are widely used by policy makers and researchers, and are often described as a continuous process or cycle. Australia works on the US system and follows the "4 phases", although the UK, seeking to embrace a holistic approach, views the wider context of Integrated Emergency Management (IEM): the UK Cabinet Office specifies six stages in its emergency management concept: anticipation, assessment, prevention,

preparation, response and recovery (Cabinet, Office, 2013). The first four of these steps address the issue of preparedness (before), whilst the last two, respond and recover, deal with "during" and "after." Similarly, the phases of EM are a global concept used by many developed countries and which the UAE has been quick to adopt for usage. These phases and the relationship between them is well understood in the UAE and is coordinated by NCEMA in partnership with other emergency agencies such as police, civil defense etc. However, it seems the problems are not with the four phases of EM, but the composition and application of each phase and how the activities of each phase link to the next, in particular the link between the preparedness and response phases, which are very important for reducing the impacts of any emergency or disaster. The evaluation of the US, UK and Australian EM standard and phases shows that the UAE struggles to link the preparedness phase with the response phase by enhancing and applying the preparedness elements.

C. Levels of Responsibility

It can be observed that levels of responsibility relating to emergency management in all four countries follow the lines of their national system of government, in the UK at national, regional and local level, and in the US at national, state and local level. Australia deviates slightly from this system in that, although there are three levels of government, headed by the Commonwealth, the lower tier – local government - draws its powers and responsibilities from its respective state governments (Shaw et al, 2003). Due to its unique constitutional arrangement, Australian state and territory governments are responsibile for emergency management within their jurisdiction and have the laws, funding mechanisms and organizational arrangements in place to deal with disasters (Commonwealth of Australia 2009). Unlike the ever-present federal government approach in the US, the Australian approach to emergency management could be described as "bottom-up" (Arklay, 2012). This approach puts leadership in the hands of the person on the ground. Perhaps this approach is what the UAE was also trying to incorporate into its standards when the NCEMA signed a MOU with Australia in June 2013. Since Australia is the only country with which the UAE has an MOU, it seems that the NCEMA wants the opportunity to learn from the EM concepts used in Australia in order to improve the UAE emergency management standard. However, in order to make the learning process effective, it is important to understand areas which require improvement, which is what makes this research important.

In conclusion, there are distinct aspects which characterize each country's approach to emergency management, as seen the table 2.5 below:

Table 2.5 Different Approaches to EM in Four Different Countries

COUNTRY	APPROACH	CYCLE	LEVELS OF RESPONSIBILITY	MAIN CHARACTERISTICS
US	All hazards/ Comprehensive Integrated	Four phases	Three levels: government-state-local	• Closely linked to prevention of terrorism
UK	Integrated Emergency Management (IEM)	Four phases, with two guidelines	Three levels: government-area-local	• Decentralized • bottom up
Australia	Comprehensive/ Integrated	Four phases	Two levels: commonwealth (state)-local	• Decentralized • Volunteerism
UAE	All hazards/ Comprehensive Integrated	Four phases	Two levels: Federal and local	• Decentralized

As seen above, the US, UK and Australia adopt a decentralized "bottom-up" approach, whereas the UAE adopts a centralized "top-down" approach. Although there are levels of autonomy at the local level for emergency preparedness in the UAE, response is coordinated from the top during emergencies. However, this top-down or bottom-up approach is only relevant to the response phase of emergencies or managing incidents. As examined in the standards and frameworks used by the US, UK and Australian, preparedness is at all levels based on capabilities and risks that have been identified and assessed. The US, UK and Australia have certainly experienced hazards, threats and emergencies/disasters of different scales which have influenced changes in their EM policies, standards and frameworks and led to emphasis on the preparedness phase. While the UAE is yet to experience as much in terms of hazards, threats and emergencies as these three countries, disaster events such as motorway accidents, cyclones, flooding, terrorist operations, etc., which have been occurring since NCEMA was established, has shown that the standards and approach used by the UAE need to be reviewed based on current threats and hazards.

As reviewed and examined in the UKEM standard, the focus of the EM system is regularly reviewed from the preparedness phase in order to improve response to future emergencies.

For example, the 2005 London bombings raised questions about the readiness of the UK to effectively deal with large-scale disasters and mass casualties (Kapucu, 2011), so the preparedness cycle is subjected to continuous comprehensive process. Furthermore, severe weather conditions, such as flooding and storms, and civil disturbances, such as riots and the effects of strikes, have also influenced the emphasis on resilience at the preparedness phases. Perhaps the UAE ought to use the challenges experienced in the past few years to review its EM standards and frameworks in the same way as the UK, US and Australia have done for many years, by reviewing its preparedness components.

D. Conclusion of National Emergency Management

In studying the emergency management systems of the US, UK and Australia, gaps, differences and similarities have been identified. However, it is also evident that factors such as geographical, social and political influence emergency management in these countries, and the same applies to the UAE. What is certain is that all the emergency management policies and systems have been constantly evolving over several years to meet current and future challenges, and that lessons can be learned from their successes and failures. Having examined these international standards in comparison with the standards used by the UAE, the next chapter will examine in detail the preparedness phase which is the main focus of this research, with the aim of helping to identify areas where the UAE can improve its emergency management standards, in particular the phase which determines response to emergencies and disasters.

2.7 Summary of Chapter

This chapter has reviewed and provided information on international and national efforts on emergency management and strategies aimed at reducing the impacts of emergencies/disasters. Although the extent of influence is uncertain since many countries already had emergency management standards existing before the Yokohama strategy and Hyogo framework, this chapter has recognized that emergency management has dramatically developed in its approaches, standards and frameworks. Definitions of emergency management, principles of emergency management standards and phases of EM have been evaluated, while a critical evaluation of the EM standards and frameworks used in the US, UK and Australia has helped to understand the concepts and standards borrowed by the UAE. By doing this, this chapter has helped to identify differences and similarities in standards, but also

the area that requires further evaluation, ie, the preparedness phase. As the US, UK and Australian EM standards have shown, every hazard, emergency or disaster can be better managed by improving the preparedness elements and components in order to enhance response. However, the literature reveals that there is no preparedness framework in the UAE emergency management standard. This chapter has also helped to achieve the two research objectives it set out to achieve while providing background for the third objectives, which the next chapter will attempt to achieve. Thus, the next chapter examines the emergency preparedness phase and the elements of emergency preparedness required for improving EM standards, approaches and framework in the UAE.

CHAPTER THREE
EMERGENCY PREPAREDNESS MODELS AND FRAMEWORKS

3.1 INTRODUCTION

This chapter builds on the previous one but aims to achieve the second objective of this research, which is "to explore the emergency management standards and preparedness frameworks applied in developed countries in general and the UAE in particular." The main finding from the previous chapter is that the US, UK and Australia are advanced in terms of preparedness, and have frameworks and guidelines for this purpose. For example, in 2005 the USA set up guidelines for preparedness (Secretary of Homeland Security, 2007). In a similar vein, the first four phases in the UK standard function under the preparedness department (Cabinet Office, 2009). However, although the preparedness stage is a critical element in the EM cycle, the UAE has no emergency preparedness framework in their standard. As pointed out by Haddow et al (2011) no emergency management organisation can function without a strong preparedness capability.

Therefore, to achieve its aim, the chapter has been divided into four main sections. The first section provides generic definitions of emergency preparedness and narrows down the definitions which will be adopted in this research in view of providing a more lucid understanding of emergency preparedness phase. The second section provides a critical analysis of various preparedness frameworks and models. This section compares and contrasts emergency preparedness frameworks and models used in the United States of America (USA), United Kingdom (UK) and Australia. The justification for selecting these countries is already highlighted in chapter 2 section 2.4. The aim is to compare and contrast different preparedness models and frameworks, allowing the identification of key elements which affect preparedness, so as to use these elements as a basis for the investigation of the current situation of emergency preparedness in the UAE. The third section critically examines the elements of emergency preparedness. The last section is the summary and conclusion, which also launches the next chapter.

3.2 DEFINITION OF EMERGENCY PREPAREDNESS

Emergency Preparedness can be defined as the arrangement to ensure that all resources and services required for coping with any imminent emergency or actual emergency are identified,

determined, mobilised and deployed (EMA, 1998; Fagel, 2011). Emergency preparedness can also be considered as the process of ensuring that measures for emergency are decided and in place and that communities, resources and services are capable and ready for coping with the effects of emergency (Gordon, 2002). According to FEMA (2015) preparedness is the state of being ready for action during a disaster or emergency and based on this definition, the preparedness phase is achieved and maintained based on a continuous process of planning, training, organising, equipping, exercising, evaluating and taking corrective action. This also infers that planning for emergency or being prepared for emergency is the development and maintenance of agreed procedures to prevent, reduce, control, mitigate and take other necessary actions in the event of an emergency (CCA 2004-218).

All the definitions highlight the components of the preparedness phase - planning, training, equipping and exercising – and, in agreement with what has been discovered in the previous chapter, these elements are essential for the preparedness stage. However, FEMA's definition gives a comprehensive perspective of preparedness and will support the main aim of this research: to select all elements which affect preparedness. Therefore, FEMA's definition will be adopted as a definition of preparedness in this research.

The review of these definitions and arguments, research and analysis of standards in the previous chapter has helped to identify elements such as risk assessment, early warning system, information system, planning, training, exercise, organise and equip and public education as used in the US, UK, Australia. However, the previous chapter and the analysis of the emergency preparedness definitions have given indicators that the preparedness stage consists of important elements.Therefore, the next section examines the essential components, features and elements of emergency preparedness by looking at preparedness frameworks used by the US, UK and Australia.. While previous chapters have identified that no emergency preparedness system or frameworks exist in the UAE, the aim of this chapter is to identify the key and essential elements affecting the emergency preparedness phase in order to use them as a basis for investigating the current practice in the UAE's emergency management standard. By so doing, areas where problems lie will be identified so that the fieldwork can be used to identify the barriers for implementing an emergency preparedness framework in the UAE's emergency management standard.

The research follows this rigorous process because it is evident that the UAE has adopted UK emergency management. So it is strange that there is no evident preparedness framework, as

in the UK. Therefore this chapter has started with definitions of emergency preparedness to provide background understanding into this EP phase, and subsequent sections examine emergency preparedness frameworks and models.

3.3 ANALYSIS OF VARIOUS FRAMEWORKS OF PREPAREDNESS

The aim of this section is to compare and contrast various frameworks and models of emergency preparedness implemented in the UK, US and Australia in order to identify the key elements essential for the emergency preparedness stage. This will then be used as a basis for investigating the current practice in emergency preparedness arrangements in the UAE.

3.3.1 Pelfrey's Model

According to Pelfrey (2005), "….a consensus strategic process of disaggregating preparedness into phases or elements to organize the preparedness process has not been articulated." Based on that concern, Pelfrey suggested that the best way of understanding preparedness is to use a timeline or cycle. Hence, Pelfrey makes a distinction between two different kinds of preparedness definitions. The first is the 'preparedness cycle' which relates to the steps, "planning, training, equipping, exercising, evaluating, and taking action to correct and mitigate."(Department of Homeland Security, 2004).The second is referred to as the 'Cycle of Preparedness' which adopts a comprehensive approach and includes a number of different elements that happen before, during and after a disaster (Pelfrey, 2005). Pelfrey's second definition – the Cycle of Preparedness – shown in figure 3.1 below, is more applicable to emergency management as a whole rather than only to emergency preparedness, since the cycle of emergency management appears clearly in his model as highlighted in figure 3.1. Therefore, this research will adopt the idea of the definition of 'preparedness cycle' in order to direct the research scope specifically towards just the elements of preparedness.

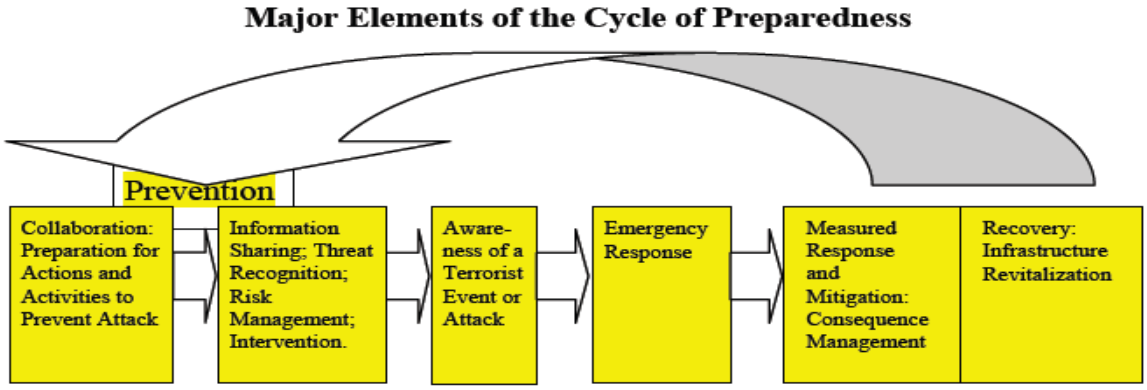


Figure 3.1 Elements of the Cycle of Preparedness (Pelfrey, 2005)

According to Pelfrey (2005) the model in Figure 3.1 shows four steps, starting with prevention. This is divided into two stages, the first of which is collaboration. Collaboration is defined by Pelfrey as, "agencies, organizations, and individuals from many tiers of public and private sectors, working, training, and exercising together for the common purpose of preventing terrorist threats to people or property". Although Pelfrey's model concentrates on terrorist attacks, his definition of collaboration highlights the importance of training and exercising as key elements in preparedness, since the principles of emergency management emphasise that it is necessary to prepare for all kind of hazards, whether man-made or natural. This is in agreement with what has been highlighted in section 3.2: that training and exercising are important elements for preparedness. The second stage of prevention covers information sharing, defined by Pelfrey as, "the process of gathering, storing, analysing, and disseminating data, information, and intelligence between and among different agencies, organizations, and individuals, on a need-to-know basis, for the common purpose of foreseeing or recognizing terrorist threats, actions, and behaviours" (Pelfrey,2005). So it is clear that information sharing is an essential element for preparedness. Despite the comprehensive phases of emergency management shown in Pelfrey's cycle, it can be observed that this preparedness cycle is for a specific risk and emergency, i.e., terrorist attack. As explained previously regarding the planning stage, which includes documenting response procedures in plans, it can be seen that the specific reference to terrorist attack in Pelfrey's model means that it is a specific plan for an identified risk.

According to Pelfrey (2005), the five distinct elements in this preparedness model, namely: collaboration, information sharing, threat recognition, risk management and intervention, are not equal in importance. He explained that collaboration and information sharing are

necessary and considered as the most essential elements of the preparedness cycle explained in the domestic preparedness arrangement in the US. However, the description of the prevention stage is vague as regards specific activities aimed at preventing a terrorist attack. Regardless of this limitation, Pelfrey's preparedness model seems to show a good link between each stage of this cycle and how they connect with one another, but it is uncertain if the vagueness of the preparedness stage will translate into effective response when a terrorist attack occurs. However, based on the scope of this research, the preparedness cycle has the essential elements of preparedness which makes it a suitable emergency preparedness cycle. Therefore, this research will concern itself with only those which influence preparedness and match those presented in table 3.1 by the end of this chapter.

3.3.2 United States (US) Model

As explained, Pelfrey's preparedness model is a model for a specific risk which is considered high in the US: that of terrorist attack. However, there is a general preparedness model used by the Federal Emergency Management Agency (FEMA) which explains how the EM preparedness phase should be carried out (FEMA, 2012). The US faces a wide range of threats, from tsunami, hurricanes, earthquakes, floods, extreme weather and impacts of act of terrorism ,to mention a few. This means that various approaches are used for particular threats and hazards, and various models and frameworks employed (IAEM, 2013). The US has a model used specifically for preparedness for all hazards, as mentioned in chapter two, section 2.4.3, which is based on the National Preparedness System (NPS) .The preparedness cycle is shown in figure 3.2:

Figure 3.2 The Preparedness Cycle (FEMA, 2012)

As illustrated in figure 3.2, the United States model is a closed, ongoing process made up of five stages, starting with planning, moving to organizing/equip, training, exercising and evaluation in order to continue the cycle again. These five elements are mentioned in section 3.2. In addition, this process echoes the study's definition of the preparedness cycle adapted earlier in this chapter. Unlike Pelfrey's model, which is divided into before, during and after disaster stages, FEMA's model concentrates solely on the early stages of hazard, i.e., before a disaster. In contrast to the Pelfrey model, its cyclical pattern emphasises the continuous processes that need to be followed in order to achieve preparedness. Although it does not place preparedness in a wider context, this is something of an advantage for the purposes of this research. This model is specifically related to the early stages of emergency preparation, and therefore it will be useful in identifying the key elements for the preparedness stage.

While the continuous process of elements in the US model is good practice which needs to be adopted for the preparedness phase, the cycle fails to incorporate elements such as risk assessment, early warning, information/communication and public education. While risk assessment has been included in the Emergency Preparedness Goal and Emergency Preparedness System (EPS) mentioned in chapter 2 section 2.4.3., it can be concluded that elements which are not included in this framework already exist in the EPS and preparedness goal (FEMA, 2015). According to Edwards and Goodrich (2007), it is beneficial to subject preparedness to a continuous process which involves evaluation, review and improvement of the plan, but Kapucu (2006) also emphasised the importance of being able to identify and assess the potential impacts of foreseen threats, hazards, risks or emergency in a place. These components are all stated in the EPS used by FEMA to prepare for any form of incident that can cause disruption to the community.

However, the omission of early warning system, information system, risk assessment and public education in the emergency preparedness framework in Figure 3.2 shows that no form of communication between responders and the public is prioritised in this cycle. Perhaps communication is embedded in one of the stages in the cycle, because according to Molino (2006), the role of communication in all the phases of emergency management is crucial for effectiveness. Therefore the obvious omission of critical elements such as risk assessment, information system, public education and early warning leaves a lot of questions in the US preparedness cycle. Does it mean that no form of early warning is done? Or does it mean that the public are already aware of all emergency preparedness plans? Or can it be possible that all risks and hazards are known and same risks/hazards are occurring annually with similar magnitude. All these questions show the vagueness of the US emergency preparedness framework and the confusion it might cause for emergency organisations using it or for other countries who adopt it.

Furthermore, research and reports on disasters in the US in the last decade all show that there are problems with response to disaster events (Molino, 2006); perhaps it is with this preparedness cycle. Having said this, it is important to state that the circular process of preparedness is worthy of note and emulation as it provides ample opportunity to continue to improve preparedness elements as long as disasters have not made landfall. Thus, while the comprehensive characteristics of Pelfrey's model should be noted for the purpose of this research, the continuous process of the US preparedness model will also be emulated as best practice which facilitates improvement of process. Therefore, the five elements highlighted in the US preparedness model are considered the most essential for the preparedness phase in the US to be included in the main framework. Hence, they are important for the purpose of this research and are highlighted in table 3.1. They will also be used as part of the elements of preparedness which will be investigated in the UAE emergency management standard.

3.3.3 United Kingdom (UK) Model

In contrast to the United States, the UK emergency planning cycle includes two main processes, embed and consult (CCA, 2004), which are expected to serve as guidelines for the preparedness phase. The CCA (2004) guide clearly states that these two major processes must be facilitated by taking direction from the risk assessment, which helps to set the objectives of the entire preparedness phase, including the planning element. Figure 3.3 illustrates the two processes of the emergency planning cycle in the UK and their relationship to each other.

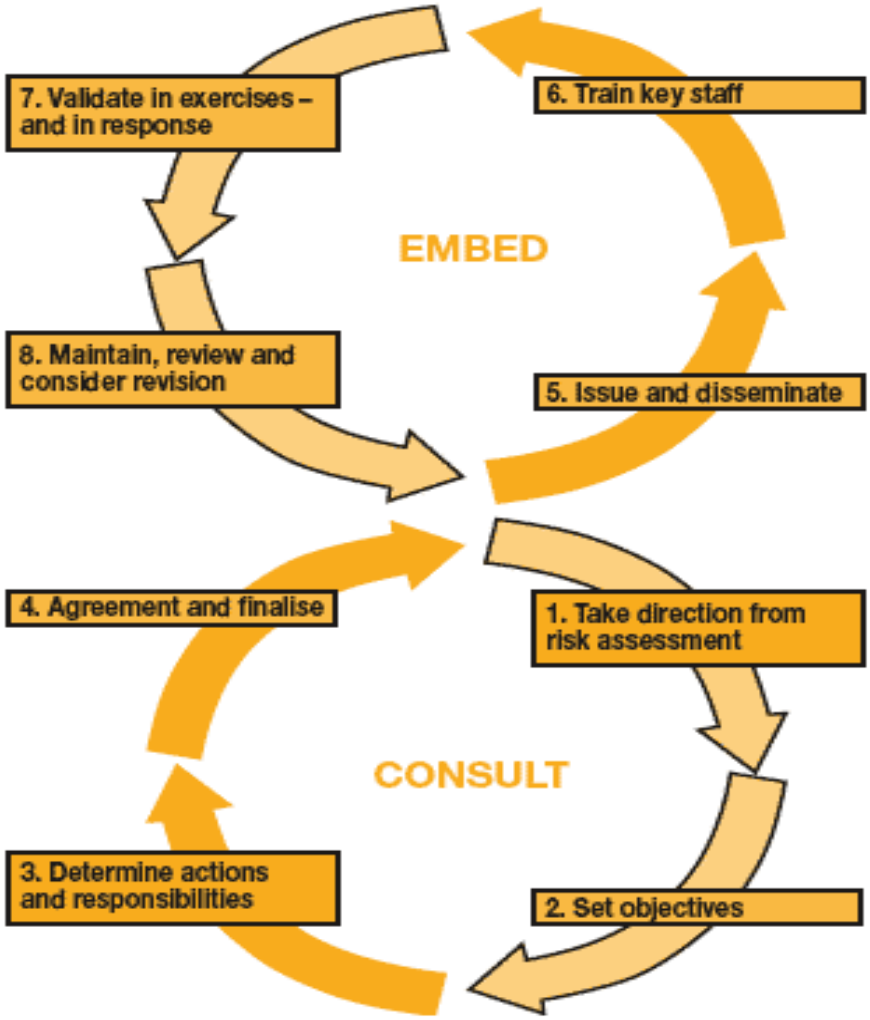


Figure 3.3 The UK emergency planning cycle (extracted from CCA, 2004:54)

Figure 3.3 shows that there are two main points in this cycle: consult and embed. The former involves determining the actions and responsibilities of organisations required to manage the risk, after which all actions and responsibilities are agreed upon. This point works via four steps, namely:

1. Take direction from risk assessment
2. Set objectives
3. Determine actions and responsibilities
4. Agree and finalise

These steps are considered essential for the consultation process to jointly determine how best to manage any identified and assessed risks.

The second phase, embed, involves four steps which are:

5. Issue and disseminate the plan within organisations that will be responsible for them. According to Dillon et al. (2009), this phase of issue and disseminate is expected to help decide the information system and communication equip and organise required for implementing the plan.
6. Train key staffs - emergency organisation personnel involved in responding needs to be trained based on agreed procedures which help them to validate the plan through an exercise to prepare for response phase CCA, 2004).
7. 'Validate in exercise and in response' influence the eighth step which is;
8. 'Maintain, review and consider revision'.

Some of the above steps also help to further review the emergency plan. This includes profiling of the risk elements, setting objectives of the plan, organisation and responsibilities, and making tasks and resources, (Cabinet office, 2005; Canton, 2007).

The UK emergency planning cycle seems to be the most detailed, comprehensive and holistic cycle examined so far in this chapter. By having two processes in a cycle, it seems all the elements of the preparedness phase are expected to be carried out in one form or another in this cycle. While the words used seems to be basic enough for anyone to understand and all elements seem to be contained in this cycle, the cycle can be rather confusing. The UK emergency planning cycle appears to be two independent cycles operating without intercepting even though they are numbered in sequence. Both the consult process and the embed process seem to be a continuous cycle.

One can only infer that each main process is coordinated by different organisations so that there can be a routine process of identifying and assessing risks so that plans can be reviewed appropriately by step 8. This inference is drawn from the regular exercises carried out by emergency organisations in the UK. Testing and validation of some plans is done every six months while others are annually based on new risks and different impacts that an emergency presents (McCreight, 2011). For example, after any major emergency in the UK, there are independent or public reviews, an example of which is the Pitt Review, which subsequently influenced how flooding was managed in the UK (Pitts Review, 2008).

Thus as part of the requirements for the emergency preparedness cycle, planning is expected to be well structured for preparedness procedures (Gordon, 2002), and to comprise context and sections for emergency needs (Alexander, 2002). The CCA (2004) also emphasised the

importance of description of roles, duties and responsibilities of responders and multi-agencies, of which contacts of some designated personnel should be included in the appendix of any plan,(CCA, 2004:203) amongst other requirements. While these detailed requirements are beneficial for implementation, it is unclear how the elements of consult and embed work effectively without confusion and without measures in place to ensure effectiveness and efficacy.

In summary, it was found that the UK emergency planning cycle includes two main processes, which are embed and consult. These two main steps include risk assessment, information system (issue and disseminate), planning (determine actions and responsibilities), organise and equip (agreement and finalise), and training and exercise. These elements confirm that those mentioned in section 2.4.3 are essential for the preparedness stage. However, the UK's emergency planning cycle does not mention early warning system and public education. Therefore, the preparedness phase element discussed in this chapter is crucial to ensure preparedness and response to the hazards discussed in chapter two section 2.4.3 section B. The essential elements found in the UK preparedness framework are also presented in table 3.1.

3.3.4 The Australian Model

Australia faces a variety of natural and non-natural hazards such as cyclones, bush fires, terrorism, tourism risks, technological hazards, biodiversity, tsunami, avalanche, storm surge and flooding (EMA, 2004). As Australia's approach to emergency management aims to be both 'comprehensive' and 'integrated' (EMA, 2004) a broad approach is taken, taking in prevention, preparedness, response and recovery. Emergency Management Australia (EMA) identifies typical activities for each stage. This study will take only the elements from the preparedness stage, as illustrated below in figure 3.4, to evaluate the sets of activities in relation to elements of emergency preparedness.

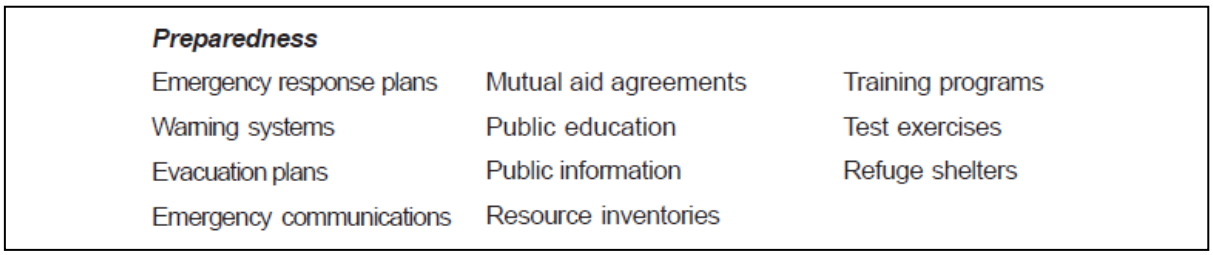


Figure 3.4 Preparedness Elements of Australian EM (EMA, 2004)

In general, the Australian approach has similarities with Pelfrey's models, which also cover the whole timeline for the emergency cycle, and is the concept of the comprehensive principle. Again, as with Pelfrey, for the purposes of this study the key elements which affect only the preparedness stage will be isolated and adapted. As observed in the preparedness chart for Australia, the elements of preparedness have been broken down into precise activities which can be readily implemented and understood by community and emergency managers. It is also observed that, while it seems that all the elements of preparedness as examined earlier in this chapter are included in these sets of activities, risk assessment is clearly omitted. It can be assumed that risk assessment has been conducted as a major activity prior to commencing this activity, but no information is provided regarding this.

Mendonca et al. (2001), Register and Larkin (2008) and Dillon et al. (2009) all emphasised the role and significance of risk assessment in decision making, communication, emergency planning, deciding resources and capabilities. Although risk assessment is not included in these preparedness activities, it is considered as an essential part of the comprehensive and integrated approach used for EM and preparedness in Australia. This is explained in Chapter 2, section 2.4.3 sub-section C. The Australian model also highlights the importance of elements such as refuge shelters and evacuation plans in case a large scale emergency or disaster occurs requiring people to be moved to safety. No other preparedness cycle or stages examined so far has mentioned these two additional components of disaster management (Coppola, 2011).

Also the inclusion of elements such as resource inventories is commendable, because available resources are made known and required resources can be determined during the planning process (McEntire and Myers, 2004). Furthermore, the element of mutual aid suggests that attention is given to partner organisations, roles and responsibilities of responders and how best to organise and equip for response (Kapucu, 2006). This is mutually agreed by all prior to any emergency and resources for basic support during response to

emergency is jointly agreed upon, documented and signed by all parties. The merits of the Australian preparedness model are drawn from the detailed activities outlined and the inclusion of other elements which can enhance emergency preparedness and response. While risk assessment is not included in the model, lessons can be drawn from the clarity of the model, description of the elements as activities that need to be carried out as well as inclusion of other complementary elements. The Australian preparedness model is similar to the US, which also did not include risk assessment in the preparedness model, but embedded it in approaches which influence all phases of the emergency management standard, as explained in Chapter 2, section 2.4.3 .Therefore, the important element for the preparedness stage found in the Australian model is presented in table 3.1.

Having examined the emergency preparedness frameworks and models used by the UK, US and Australia, the next section aims to define, explain and discuss the characteristics of all the elements identified in these frameworks as well as the ones mentioned as important for preparedness in Chapter 2, section 2.4.3.

3.4 ELEMENTS OF EMERGENCY PREPAREDNESS

Previous sections have provided a brief idea of the preparedness phase and models/frameworks, and their application in the US, UK and Australia. In addition to this, merits of each of the models and frameworks evaluated in section 3.3 will be adopted as bases for assessing the current practice in the UAE. This is because the critical evaluation carried out in section 3.3 shows limitations in the preparedness models and frameworks. While it is uncertain if the problems experienced in the UAE have their origin in these limitations, since the UAE has adopted emergency management standards used in these countries, the fieldwork will help to determine the problems in the UAE's emergency preparedness phase and why no main framework, system or model is used for preparing for emergencies.

Furthermore, the key elements which influence preparedness have been identified from the various frameworks and models. For the purpose of this study, only the essential elements examined in section 3.3 will be adopted as a working guide for the research. Authors such as Alexander (2002; 2005; 2006; 2009) and Canton (2007) have repeatedly emphasised the significance of risk assessment, early warning system, information system, planning, training, exercise, organise and equip and public education and some of these elements have also been suggested by authors involved in emergency management such as Gordon (2002) and Dillon

et al (2009). Other authors such as Van de Walle and Turoff (2008), McEntire (2004), Ball and Ball-King (2013), and CCA (2004) have all highlighted the importance of these elements independently and jointly, implemented as a continuous process and inevitable aspect of the preparedness phase. These eight elements are considered as essential and should not be compromised on if response to any nature of emergency or disaster is to be effective in saving lives and minimizing costs and impacts.

This makes emergency preparedness important since it deals with being able to avoid or plan to manage both natural and manmade disasters. Alexander (2009) further explained that emergency preparedness should take into account all hazards, impacts, all phases and all stakeholders relevant to preparation for disasters. The importance of "all hazards", "all impacts", "all phases" and "all stakeholders" is explained in section 2.4.1 as part of the principles of EM standards and this was also evident in EM standards in the US, UK and Australia, as explained in section 2.4.3.This means that elements of preparedness such as risk assessment, information system, early warning system, planning, training and exercise, organising equipping, and public education are maintained continuously during the preparedness phase (Alexander, 2009; Dillon et al., 2009; Ball and Ball-King, 2013). This is vital in order to help to reduce the impacts of risk of disaster and its possible occurrence, which can cause harm and disruption to the plans and safety of people, the public and the country (Hubbard, 2009).

Having identified these essential elements of emergency preparedness it is now necessary to examine them in more detail. Therefore, the following section aims to present information on each element in order to gain a deeper understanding of how these elements work and are implemented.

3.4.1 Risk Assessment

Risk Assessment can be defined as the process for determining the quality or quantity value of risk in relation to a situation or place and the recognised threat called hazard (Jakob, 2009). Determining the quantity value of risk requires that components such as magnitude or potential loss are calculated or acknowledged in relation to the probability that the loss will eventually occur (Lerche and Glasser, 2006).This process usually determines the acceptable risk or the ones which can be tolerated. According to Smith and Fischbacher (2009) risk assessment is the process which helps to enhance the analysis of the prevention and

preparedness measures based on capacity for planning, which helps to improve disaster management, as well as the development of essential policy for disaster management. Having clarified the meaning of risk assessment, the next sub-sections discuss the concepts of risk assessment, factors influencing risk assessment, and the relevance between risk assessment and preparedness phases.

A. Concepts of Risk Assessment and Management

The definition of risk infers that risk description can be based on threat or scenario (Regester and Larkin, 2008). Scenario-based risk involves risk in circumstances which involve a place, time and processes. However, risk in relation to disaster management is usually threat and scenario based, which affect places, time and process of managing disasters and the activities in society. This understanding of risk as threat or scenario based, or both, is important for determining the planning methods and measures which will be used to manage risks (Jakob, 2009). Therefore, risk assessment incorporates a variety of methods and steps aimed at identifying and evaluating risks based on competing evidence, perception and social agenda (Lofstedt and Boholm, 2009). The process for risk assessment involves that risk be identified, analysed, evaluated, treated and monitored (Salter, 1997). This systematic process which involves applying management policies, procedures and practices (Lofstedt and Boholm, 2009), is known as Risk Management. It is a comprehensive framework which covers stages of identifying, analyzing, evaluating, treating and monitoring risks (Salter 1997). Figure 3.5 explains this process and relationship between identifying and monitoring risk.

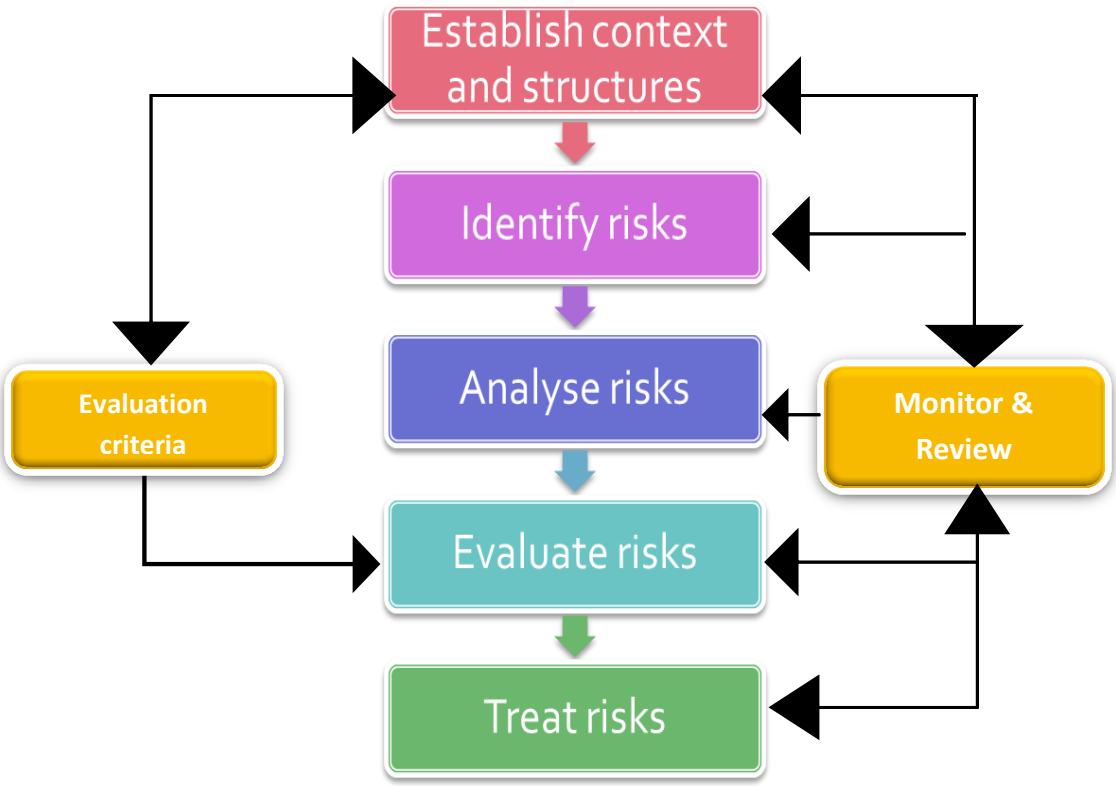


Figure 3.5 Risk Management Framework (Salter, 1997)

However, the Civil Contingency Act - CCA (2004) explained that the risk management process from an emergency preparedness perspective is one which requires communication and decisions as to whether to accept risk or not. From an implementation perspective of emergency preparedness figure 3.6 shows the difference between the framework by Salter (1997) and CCA (2004); theory and practice, and how risk can be effectively managed.

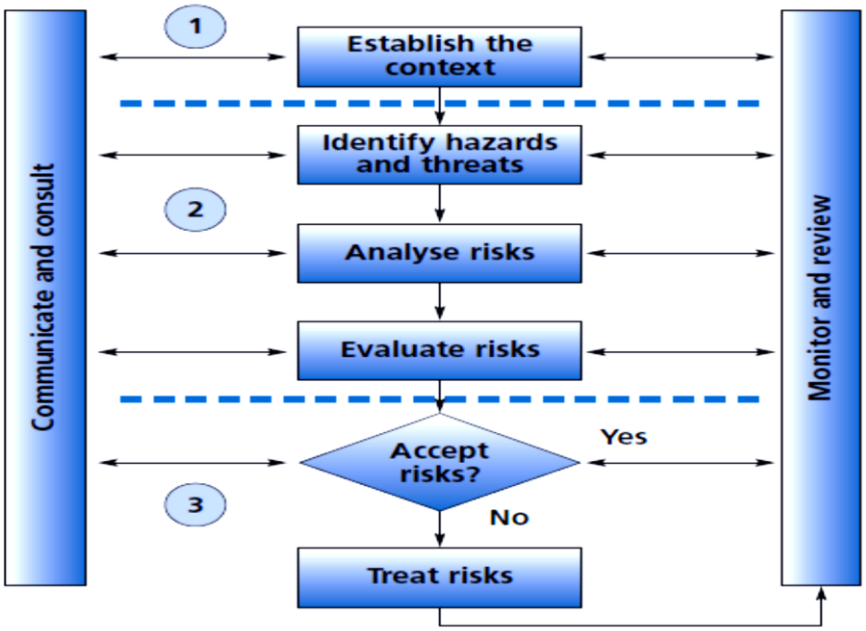


Figure 3.6 Risk Management Process (CCA, 2004: 39)

Figure 3.6 shows that it is not enough to just identify risk. Risk must be managed, monitored and communicated to those who might be affected and those who are responsible for managing it (CCA, 2004-39). Therefore, in simpler terms, the risk management process in figure 3.6shows the need for communication and consultation in order to identify, analyse and evaluate risk effectively. This process is second to establishing the context, scenario and scope of threat or risk. The third step, to accept risks or not, is also informed by monitoring and review which is still carried out after risk is treated to ensure that the risk is well managed. The model by CCA seems to be more comprehensive and indicates the precise location of risk assessment in the emergency planning process. Figure 3.7 shows the location of risk assessment and how it helps to determine emergency planning, business continuity management (BCM) and validation of plans. Plans and how they can be validated - also an essential aspect of exercise - is discussed later in this chapter.

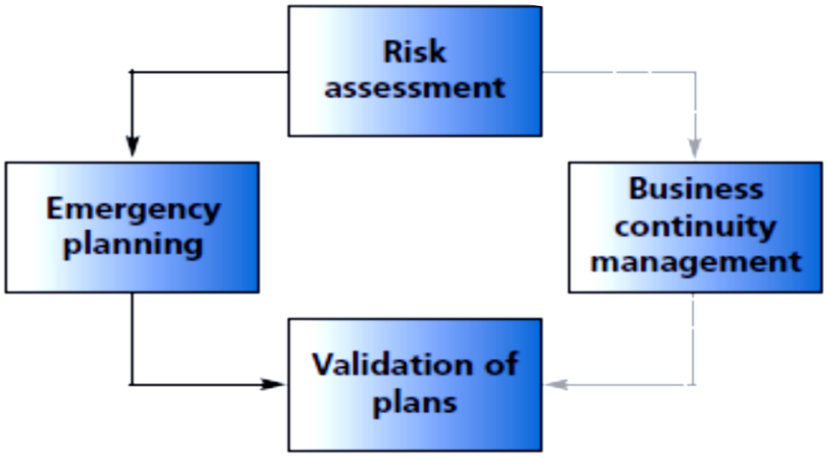


Figure 3.7 Location of Risk Assessment in the EPP (CCA, 2004: 40)

Figure 3.7 illustrates the relationship between risk assessment and how this influences other elements in the preparedness phase. This section has outlined how risk assessment and ability to manage risks can determine the process of planning, the content of plans, how organize and equip is conducted, and other essential elements of emergency preparedness. The relevance of risk assessment is further explained in section B.

B. Relevance of Risk Assessment in the Preparedness Phase

Risk assessment helps to identify and determine risk categories such as environmental, social technical, economic and other categories that can pose a potential threat to the safety of the public (Gerrard and Petts, 1998). Within this context, risk assessment ensures that the level of risks is identified, and its likelihood either prevented or mitigated (Ball and Ball-King, 2013). Risk assessment also plays a central role in influencing the types of actions taken for the other elements of emergency preparedness. Regester and Larkin (2008) explained that once potential, actual or foreseen risks are identified, the risk or risks can be mitigated, transferred, accepted or avoided completely. The impact of any identified risk helps to determine the decision, mitigating and preparedness measures to put in place to ensure the safety of the public (O'Brien, 2002). The risk management process shows that risk assessment incorporates a variety of steps to identify and evaluate risks, and ability to communicate with various groups who can present competing evidence based on their risk perceptions and social agenda (Lundgren and McMakin, 2009).

C. Factors Influencing Risk Assessment

Although risk assessment is an important element of emergency preparedness, the consult review and monitoring or ability to effectively manage risk as explained in previous sections can be demanding (Lerche and Glaesser, 2006). Authors such as Lofstedt and Boholm (2009); Lundgren and McMakin(2009); Regester and Larkin (2008); Dillon et al. (2009); Ball and Ball-King, 2013)have written about risks, risk management and risk perception and have identified the following factors as ones which can make the ability to manage risk difficult:

1. Ability to identify and anticipate risk
2. Lack of time
3. Lack of understanding of potential impacts of risk
4. Risk perception
5. Communication
6. Level of expertise
7. Social, economic and political preferences
8. Resources and cognitive capacity

All these factors and others not listed here can influence the ability to make decisions which concern risk assessment required for emergency planning and preparedness. This is because risk assessment is based on the ability to identify and anticipate a risk (CCA, 2004; Ball and Ball-King, 2013), which means if risk is not identified or anticipated, no risk assessment process will take place. This factor is a major influencing one in the UAE as the level of expertise, perception and understanding of risk is minimal compared to the other countries examined in the previous chapter. Thus, government needs to understand the role of risk assessment in determining the appropriate level of emergency preparedness in order to increase public trust, competence, efficiency and accountability.

Risk assessment, therefore, should incorporate the social, ethical, scientific and factual implications of risks on the public and should be addressed within the decision-making process (Gerrard and Petts, 1998). According to Ball and Ball-King (2013) the way in which decisions are made and policies are implemented can trigger or aggravate the various risks that are present in modern cities. Therefore “governance” involves the implementation of strategies to mitigate risk and ensure appropriate preparedness for any disaster. This premise emphasises the importance of effective risk communication and public education in ensuring that risks are identified, communicated, monitored and reviewed, as shown in Figure 3.6.

While emergency preparedness involves strategies which are structural and non-structural, such as policy, risk assessment can contribute significantly when there is adequate understanding of the central role it plays in ensuring that emergency preparedness is effective.

3.4.2 Planning

Planning is the systematic, ongoing and informed process which helps to prepare organisations for response to emergencies. Planning involves the process of deciding, combining and taking actions, activities and documenting plans which serves as a guide for procedures, mobilising resources and carrying out response arrangements (Bullock, 2006). This preparedness element ensures that organisations responsible for planning are engaged, informed and know their roles, competent to carry out response tasks assigned to them, and have access to sufficient resources to carry out response activity assigned to them (CCA, 2004: 53). Planning as applicable to emergencies has the overall aim to achieve effective response to any incident regardless of its causes and scale (Dillon, 2014). According to Haddow et al. (2011), the planning process should ensure that hazards and risk have been identified and assessed, especially emergencies with high risks, by taking the population and geographical location of such emergencies into consideration. Planning attempts to reduce the impacts of emergencies and in causes where the incident is preventable, such as motor accidents, planning helps to prevent it. Therefore, good planning entails actions, decisions and activities to reduce, control or mitigate the effects of emergency (Brito, 2012).

Furthermore, Brito (2012) states that planning is an essential systematic ongoing process which evolves as lessons are learnt and circumstances about identified risks change. Hence, planning is viewed as part of a cycle of activities which starts with establishing a risk profile that helps to determine the priorities for developing plans, review and revision of plans and then re-starts the whole cycle again. This means that documenting the procedure for reducing, controlling and mitigating emergency as a plan is essential. Plans are a good and satisfactory document that layout the information, aspects, communication, aims of the plan and emergency needs (Alexander, 2002). Plans also outline the control centre, complementary generic arrangements of other responders and the interaction between the responders and other organisations expected to be involved in responding to the emergency (CCA, 2004). Having identified the meaning of planning, the next sections will illustrate the essential component of the plan and the types of plan.

A. Essential Components of Plans

Plans for emergencies are expected to have specific requirements which makes them valid and capable of being used to respond to emergencies, mitigating high level risk and able to build community resilience (Lundgren and McMakin, 2009). Qualities of a good plan include but are not limited to:

- Context such as aim of plan legislative framework being used
- Scenarios such as risk, hazard and vulnerable areas to the impact of the emergency
- Emergency needs e.g. medical care, public safety, search and rescue, food and shelter, evacuation, etc.
- Resources availability and utilisation, e.g.roles of responders, equipment, building, application of resources, testing, training and validation arrangement and schedule
- Activation procedures and stand-down procedures of the plan
- Location of control centre
- Annex with other essential information such as risk register, contact details of key personnel, etc. (Alexander, 2002:96; CCA, 2004:203)

With these minimum requirements in mind, a good plan ensures that continuity of operation is possible in the event of any emergency and post disaster period without much interruption. However, these minimum requirements fail to specify that planning should be done with the inclusion or involvement of all parties involved (Canton, 2007). Canton (2007), in his book, *Emergency Management: Concepts and Strategies for Effective Programs*, plans are often made for people and emergency agencies without consultation or involving them in the process. This lack of consultation or involvement often makes response to emergencies difficult and problematic. For example, emergency plans include specifying the roles, resources and equipment necessary for response to emergency. In order to document an effective plan, it is important to confirm if the responding agencies that will help with response to the emergency have the capacity to respond and provide such expertise before stating that they will do it. This can only be done by consulting and engaging with all parties required for response throughout the planning stage (Gerrard and Petts, 1998; Hubbard, 2009).

However, the risk assessment informs the planning element and it also informs the type of responding agencies, equipment and resources needed for the planning and documentation of plans (Lofstedt and Boholm, 2009). For example, response to flooding emergency will be different to response to terrorist attacks and will require different responding agencies to be involved (Alexander, 2002). Thus, plans are considered as a blueprint which provides information about the necessary arrangement for dealing with an emergency situation as it arises in the preparedness plan (Hiles, 2004). Therefore, that response can be problematic if emergency plans fail to provide details of procedures, equipment, resources, shelter and mutual aid arrangement for emergencies (Alexander, 2006).

B. Types of Plans

Types of plans have been classified as follows:

- Generic plan which is the plan which helps with response to a wide range of possible emergencies (CCA, 2004). While they include all the minimum requirements of any emergency plan, their application can be widely based on the series of risks identified in a given location (Dillon et al., 2009). For example, this can be a plan which is capable of being used for a range of emergencies similar in procedures, resources and response requirement.
- Specific plans are procedures documented either for a given emergency or any kind of emergency specific to site or location (Dillon et al., 2009) eg, a plan for responding to a pandemic flu or a plan documented for responding to nuclear disaster. These are specific plans which cannot be used for responding to a flooding scenario (CCA, 2004).
- Single-agency and Multi-agency. The latter is a plan which states the response procedures, communication, roles and responsibilities for emergencies which require the involvement of more than one agency (Dillon et al., 2009), while single-agency is an emergency which only requires the response of one emergency agency, eg, a crime incident to which only the police respond (Dillon et al., 2009).
- Multi-level plan is a plan which covers the response arrangement for an emergency which requires resources, procedures and involvement of more than one level of government (CCA, 2004).

Despite the classification of plans, all plans are expected to explain the nature of notifications, activation procedures and stand-down procedures for when the emergency has been detected. According to the Cabinet Office (2005) this process and nature of notification also aligns with

the type of early warning system and information system required for the emergency being planned for. However, it is important to include in every plan the arrangement to maintain procedures stated in a place through exercise, since the gaps identified during exercise determine training needs (Dillon et al., 2009).

Therefore, this element uses the information from the risk assessment process to determine the type of plans and planning which has to be done to prepare for the emergency that will likely occur based on the risk assessment. The planning element also includes information about elements such as early warning signal for emergency organisations and the public, schedule for exercise and testing, organize and equip and the other elements of preparedness. The next section examines exercise and training and the link between the two in determining the level of effectiveness of the preparedness and response phases.

3.4.3 Exercise and Training

The "regulations in a plan specify the provision made for carrying out exercises and for training of staff and other persons" (CCA, 2004: 52). This infers that planning documents should include a statement about the nature of training and exercising, how this is provided and its frequency (Dillon et al., 2009; CCA, 2004). Within this context, exercise can be defined as a simulation to validate an emergency plan to rehearse key staff and/or test systems and procedures for emergency response (Dillon et al. 2009). According to CCA (2004), the role of exercise is to ensure that emergency plans and planning process are effective, while training is provided for the appropriate number of personnel who are responsible for responding to emergencies when they occur (CCA, 2004).

Therefore, training is defined as the required knowledge, skills and abilities provided to emergency responders, emergency officials, and other personnel to perform key tasks required for specific emergency preparedness capabilities which will be used for response to emergencies or disasters (FEMA, 2015). According to Dillon et al. (2009), training is also provided for other people whom responders consider strategic to the emergency response and whose roles are stated in the plan to support response to emergencies. According to Alexander (2009), this combined understanding ensures that an emergency plan serves its purpose, which is to ensure that everyone charged with responsibility of response knows their role. It also means that everyone responsible for response is competent to carry out the tasks assigned, has access to available resources and facilities and confidence in their partners for

response (Alexander, 2009). However, this is often not the case when an organisation fails to reflect on the need of the organisation and review the content of the emergency plan and its suitability for response (Dillon et al., 2009).Having clarified the meaning of the exercise and the training, the next section will address their importance to preparedness, and the types of exercises.

A. The Importance of Exercises and Training to Preparedness.

Exercising and training elements are important aspects of emergency preparedness because plans need to be validated for them to be effective (CCA, 2004). Unless plans have been tested through exercise, validated and proven, they remain unsuitable for use or response to emergency (Cabinet Office, 2005; CCA, 2004). Furthermore, exercises are carried out to test and ensure effective communication between organisations so that the communication necessary for response is confirmed, understood and known by all. Many of the communication problems and confusion experienced during response to major incidents are often due to lack of exercise to validate the communication procedures and to test early warning process for activating emergency organisations (Dillon et al. 2009)

However, communication can vary in use because in real life emergency scenarios emergencies can occur on a larger scale due to conditions such as bad weather, which then make communication impossible or challenging (Fakuade, 2014). Thus exercise is an important element of emergency preparedness because in the event of communication breakdown during actual emergency, the responders will be already informed and familiar with communication protocol and the duties they need to carry out for emergency response (Green, 2000; Gordon, 2002).

B. Types of Exercise

McCreight (2011) explained that exercise must be simple but facilitated based on analysis of an actual emergency situation and carried out in a serious and professional manner. Thus the exercise will help to examine existing operational plans, structures and procedures, while also helping to identify areas that require refinement and review in the plan (Dillon et al., 2009). The different types of exercise are as follows:

- Tabletop
- Live
- Drill
- Discussion-based

Some of these exercise types, such as live and drill, can be large scale involving all emergency organsations and members of the public to test emergency procedures (Green, 2000). This will be carried out in a specified community location and communicated to the public in order not to confuse the live exercise with a real emergency situation. The exercise type used to test and validate a plan is determined based on scenario, procedures, capability, communication and protocol that require testing (Green, 2000; CCA, 2004).

The decision about exercise type is also influenced by risk assessment so that the exercise is aimed at testing capability to reduce, mitigate or control the risk, which makes risk assessment the first step in the emergency planning process (McCreight, 2011). Although exercise can be demanding and stressful, requiring detailed coordination, planning and time to organise and carryout, when done effectively it helps to enhance skills (Green, 2000). It will also help to reveal the ability and skills of responders to cope with real life emergencies and to identify type of training needs required for improving responders' capability to respond more effectively when the emergency happens (Alexander, 2002).

Thus exercise helps to identify areas where existing capabilities to manage emergencies are insufficient and where additional resources and training are required for the level of capability desired (CCA, 2004). Therefore, training is distinct from exercise because training is about increasing the skills, capability and competence of response personnel named in the plan and who will be mobilised for emergency (Dillon et al., 2009). Training is informed by exercise and plans, and vice versa, and it helps to raise the confidence of emergency responders and personnel to successfully carry out emergency procedures based on the understanding of the objectives stated in the plan and the roles of responders being trained in delivering the objectives (Dillon et al., 2009; CCA, 2004).

Therefore, this section has established that the purpose of exercise is to validate plans, develop staff competencies, test emergency procedures and give staff and responders the opportunity to practice carrying out their roles in the plan. The purpose of training, on the other hand, is to identify limited capabilities and to use the assessment of capability to develop specific skills needed to perform roles stated in the emergency plan. According to Alexander (2002), the roles, impact and benefits of training can only be identified if individuals are positioned in the roles they will be performing during emergencies. In addition, personnel who will be responsible for emergency response and management are expected to be organised and well equipped for the tasks they need to do. This emphasises the

importance of the next elements - organise and equip - which will be discussed together due to their overlapping tendencies.

3.4.4 Organise and Equip

Emergency assistance can be difficult to implement with limited materials, resources, equipment and time (Alexander, 2006). This makes organise and equip equally important elements of emergency preparedness. Organise and Equip involves identifying and organising a reliable database of key relevant resources and an operations system capable of handling emergency communications, facilitation and procedures (CCA, 2004; Bullock, 2006). Equip, which needs to be done at the preparedness phase, involves ensuring good service, supplies and facilities which can facilitate effective emergency response (Cabinet Office, 2005). The 'organize and equip' elements particularly require a reliable system of communications for response to emergencies which are effective within emergency organisations, especially the ones responsible for response (Brito, 2012). Organise and equip are also crucial because they help to ensure that communication between and among emergency organisations and with the public are well understood and communicated (Brito, 2012). All mechanisms, facilities and procedures for operational response activities are expected to be organised using organize and equip elements so that areas and emergency organisations which require further equipping can be identified and organised before any incident occurs (Dillon, 2014).

While vehicles, protective equipment and health and safety issues of personnel are also addressed using the 'organize and equip' elements, the emergency operations unit/centre is always given priority, using these elements as part of the emergency preparedness phase (Walle van de and Turoff, 2008). Brito (2012) states that equip as an element of preparedness helps to determine the point of rendezvous as well as the vocal point of correspondence from where response arrangements will be coordinated, monitored, evaluated and mobilized, and this needs to be organized as stated in the emergency procedures in the plan.. This is key to effective and efficient organising of facilities, resources and services required for responding to emergencies and ensuring the safety of the public. Furthermore, good equipping and organising is required in order to develop and implement comprehensive public awareness, public education programmes and information systems and modality (Dillon et al., 2009). Equip usually entails alerting signals, communication gadgets and information systems that can serve the response crew and the public (Brito, 2012).

Essentially the organise and equip elements involve the ability of the emergency sector to engage with the public through the media, with schools, private and public organisations, voluntary agencies and other institutions in order to make them aware of the risks they live with as well as prepare them for response to emergencies. According to Phillips (2005), the importance of being well organised and equipped during the planning phase of an emergency can encourage the participation and involvement of the public in emergency management systems.

Therefore, organise and equip needs to be decided based on the planning element and in specific consideration of early warning systems, information systems and public education applicable in relation to the risks assessed (Dillon et al. 2009). According to Phillips (2005), for organize and equip to be effective, the emergency response organisations involved in an emergency, activation and stand-down procedures in the plan, and the operation unit all need to be decided based on the impact of the emergency and who will be affected. . All these related factors help to determine the type of early warning system, information sharing method and public education approach, which all form the set of elements to be discussed in subsequent subsections. In common with other elements of preparedness, early warning system, information system and public education are essential communication concepts and components (Alexander, 2002; Dillon et al. 2009).

3.4.5 Early Warning System and Information System

There are two main aspects of communication in emergency preparedness that involve public awareness about risks of emergencies. The first aspect also involves informing the public about how the emergency sector plans to deal with the risks of emergencies when they occur (CCA, 2004: 94). The second aspect is early warning, to warn the public and provide them with information and advice necessary for the onset of emergency (CCA, 2004:94). The duties of emergency responders are often in sequence of assessing risks, documenting plans and publishing the information which can help the public to be better prepared (Canton, 2007). Research has shown that if and when the public are better informed about risks and the actions required to mitigate and reduce them in the event of an emergency, the response process will be improved and more effective (Alexander, 2009). Other aspects of information peculiar to the preparedness phase are stated in the emergency plan, which outlines the nature of notifications that ought to arise when an emergency is detected (Cabinet Office, 2005).

In addition, the emergency notification aligns with early warning to alert the emergency managers, responders and the public (Molino, 2006). The effective coordination of this communication flow is based on the level of interaction required for managing the emergency and information system appropriate for emergency manager, responders and the public (Alexander, 2002). While it has been observed that emergency situations have the tendency to disrupt communications put in place, it is important that early warning comprises detailed information and such that it can still facilitate the required communication for ensuring the safety of the public (Canton, 2007). This emphasises the importance of early warning, as well as equipping and organising good information systems which can inform responders when required (Brito, 2012). According to CCA (2004) responders require regular updates and information about emergency situations so they can take decisions that will help to deal appropriately with emergency situations. Updated information is also required for activation and stand-down procedures before and after emergency occurs and this is done through equipped information systems.

Well-coordinated information systems also help to minimise confusion between responders and the public, since responders use information systems to discharge their functions as well as to warn, inform and advise the public (Molino, 2006). To facilitate this process, many use computer databases to provide information to responders (Brito, 2012). Computers are not the only information system used for emergency preparedness; others include geographical information systems (GIS) for risk mitigation and detecting the onset of an emergency. GIS is also used in the response phase to identify badly affected areas. Siren systems, emergency management software, notification systems, network-centric emergency notification, mass text messaging services, mass automated dialling services, reverse emergency calls, etc, are some of the commonly used information system gadgets (Kapucu, 2006). However, it is worth noting that some of these gadgets, for example, siren systems, notification systems, mass text messaging, are also used as emergency notification systems for public warning for emergencies. For example, siren systems are used to warn the public of tsunami and flood and to activate evacuation plans for areas which might be badly affected by the impact of such events (Brito, 2012).

Communication and information systems can be stretched and overloaded during major emergencies due to power failure, congestion and collapse of system (Alexander, 2005). An example of this occurred during the 9/11 attack in the US and the 7/7 attack in London in 2005, where all communication networks including private networks reached full capacity

and were overloaded. Similarly, this was also the case in the UAE when there was a plane crash in Emirates of Sharjah in 2003. Communication networks were also overloaded to the extent that private phones and mobiles were ineffective, because several public and rescue teams were gathered within a small area. There is a need, therefore, to develop systematic approaches or procedures for ensuring that responders, emergency managers and the public all understand the warning system and know what each information system is used for (Brito, 2012). Edwards and Goodrich (2007) explained that adequate time must be devoted to preparedness to respond such that response time can be well utilised and ensure that each emergency attracts appropriate reactions when it happens. Furthermore, there are several limitations with information systems and warning systems depending on the emergency or location. For example, if the emergency is an explosion, it can render a public address system useless, while using a siren alarm in a deaf school would also be useless.

Therefore, by examining early warning systems and information systems, it is evident that there are several types of early warning systems based on risk assessment elements identified and areas that will be affected by emergency. Information systems also depend on the types of emergency response organisations who will be involved in the emergency that might be caused by the risk assessment (CCA, 2004). Both early warning system and information system also influence the equip element of preparedness by helping to determine the information sharing platform jointly decided by emergency response organisations and other public stakeholders (Edwards and Goodrich, 2007). This is because the wrong type of information sharing or early warning system, decided without the consultation of all stakeholders, may cause confusion and inability to respond when emergency occurs. Therefore, this section has identified that decisions about early warning system and information sharing also depend on the type of risk being planned for, the emergency organisations involved in response and the likely location of the emergency (Kapucu, 2006). This is because information sharing and early warning equipment have their limitations (Alexander, 2005). The limitations of early warning systems and information systems, such as network breakdown and problems with connectivity during severe weather, emphasise the importance of the next element, which is public education.

3.4.6. Public Education

Public education can be defined as the process which involves informing and educating the public about risks and preparedness activities which the emergency organisations have put in

place to support them (Alexander, 2002). This element is often classified as public communication timeline in order to understand what type or content of information needs to be provided to the public (CCA, 2004). The CCA illustrated this progression of information and how public education should be classified, as shown in figure 3.8, below:

Figure 3.8. Public Communications Timeline (Extracted from CCA, 2004:97)

The pre-event public education or public awareness involves information to help the public understand risks they may face and the basic steps they can take to avoid these risks. Also, the emergency sector provides information about contact details and how they can be further trained or educated in procedures that can ensure their safety and that of their family or organisation (Norman and Coles, 2003). The public warning is the public education provided to the public when an emergency is unfolding to inform and educate them about safety needs, risk and measures to take. Education at the informing and advising stage involves timely information about health and welfare concerns as well as environmental risk that can affect the ability of the public to recover properly (Coppola, 2007). It is also important in order to avoid alarming the public unnecessarily. Therefore, public education can be considered as the comprehensive process of providing understanding and increasing knowledge of the foreseen risks to the public as well as encouraging preparedness measures to make them safe (Fakuade 2014).

However, the type or medium of public education depends on the composition of the public (Brito, 2012). For example, public education can be undertaken through campaigns, door-to-door awareness, publishing pamphlets containing information, media announcements, and multimedia message on billboards, direct radio broadcasts, and public address announcements in public buildings (Alexander, 2002). Brito (2012) also explained that places such as shopping centres, sports venues, transport system, schools, religious centres, etc. can be used for promoting education about hazards, risks and foreseen emergencies. However, media such as automated telephone messages, car or helicopter or other amplified means etc., are also used during the emergency preparedness phase to create awareness about emergencies before they occur (Brito, 2012). While it is important to make public education for emergency preparedness as simple as possible, it is also important that the medium selected does not provide misleading or erroneous information (Alexander, 2005). Also working with the media to implement public education for emergency preparedness requires compliance with regulations and legislative framework for emergency management, which can be time consuming and restricting (Norman and Coles, 2003).

Thus caution needs to be taken in ensuring that public education is not misrepresented by the media and diverted from its focus and purpose. Furthermore, it is important that the appropriate organisation capable of coordinating public education is decided and stated at the planning stage so that the information needed for public education is decided and agreed upon (Mendonca and Myers, 2004). According to CCA (2004), public education should clearly state the basic information the public needs, the practical implications of impacts of the emergency and the contact information for further inquiries. Therefore public participation is essential for public education to be effective and efficient. However, Phillips (2005) warned that public participation can lead to inefficiencies both in time and funds, which means adequate understanding is required and should be incorporated by the emergency sector into the design of public education during the preparedness phase.

Therefore, information about the public education element also emphasises its importance in the emergency preparedness phase and the complementary role it plays for elements of early warning system, information sharing and other elements of emergency preparedness. According to Alexander (2002), all elements and activities of emergency preparedness are practiced before emergencies occur. So for elements such as information system, early warning system, public education and organize and equip to be effective, they must be based on adequate risk assessment and planning.

Certain elements such as risk assessment and planning are often seen at the inception of the preparedness phase because they help to inform components of other elements and even phases of emergency management (Alexander, 2002). Although the evaluation of the elements of emergency preparedness have emphasised the importance of the preparedness phase, the continued devastating impacts of emergencies and disasters have shown that there are fundamental problems with this phase. According to Alexander (2002) the main objective of this phase is to inform, instruct and direct responders and organisations about procedures and emergency resources to use in the event of any emergency. Alexander also stated that the efficiency of emergency preparedness is measured in terms of lives saved and damage avoided or contained (Alexander, 2009). According to this measurement, it seems there are fundamental unresolved issues with the preparedness phase as well as consideration, understanding and application of the elements of preparedness. Or perhaps some of these elements are not given sufficient consideration as emphasised in the principles of emergency management.

Having examined these elements in detail, how they work and their framework for implementation, table 3.1 summarizes the essential elements of emergency preparedness as used in the US, UK and Australia based on the eight elements discussed in this chapter. These eight elements also inform the primary data collection process for investigating the current implementation of preparedness elements in the UAE. While the previous chapter has established that there is no documented emergency preparedness framework or system in the UAE, the fieldwork aims to identify what is being practiced and the barriers for not using the frameworks and elements from the countries whose standards have been adopted by the UAE.

Table 3.1The Key Elements Which Effect the Preparedness Stage

No	Preparedness Elements	Preparedness framework with elements
1	Risk Management	1. Pelfrey 2. UK
2	Warning system	1. Pelfrey 2. UK 3. Australia
3	Information system	1. Pelfrey 2. UK 3. Australia
4	Planning	1. US 2. UK 3. Australia
5	Training	1. US 2. UK 3. Australia
6	Exercise	1. US 2. UK 3. Australia
7	Organize/equip	1. US 2. UK 3. Australia
8	Public education	1. UK 2. Australia

3.4.7. Similarities and Differences of Approach

Table 3.1 has outlined the elements which make up the preparedness approach used in the US, UK and Australia. As seen in this table, the Pelfrey preparedness model, which is also a US hazard specific preparedness model, possesses elements which are also present in the preparedness approach used in UK and Australia, but which are completely absent in the UAE emergency management system. For example, elements such as warning system, information system, planning, training, exercise, organize/equip, are all similar elements to the preparedness approach used in the three countries, but lacking in the UAE.

While the similarities of these six elements in the three countries indicate their importance in ensuring a better preparedness phase, it also means that lack of these elements in the UAE

will result in an insufficient preparedness phase and an ineffective response phase. The differences in the approaches used in the US, UK and Australia also raise the question about why elements such as risk assessment and public education are not present in the three countries; it further suggests the need for further research in the field of emergency preparedness. According to Alexander (2002) emergency preparedness phases and planning that accompany the phase are critical in ensuring effective response.

The implication of not having all eight elements in the preparedness, especially in the UAE, means that the legislative and organizational context as well as logistics for response are not clarified, as explained by Dillon et al. (2009). The implication for the UAE also extends to understanding the historical analysis of past hazard impacts in local areas, vulnerability and risk management and validation of preparedness arrangements (Alexander, 2002). Perhaps this implication also accounts for some of the problems experienced in the response phase in the US during Hurricane Katrina and Hurricane Sandy, to name just two. It can also be assumed that the lack of all eight elements in the UK preparedness system might be responsible for the ineffective response to the 2013-2014 winter floods and in the insufficient response to 2013-2014 Australian bushfire.

Therefore, all these incidents in the US, UK and Australia emphasize the importance of having a strategic approach to emergency preparedness which contains all eight elements evaluated in this chapter. It also emphasizes the need to further understand the barriers to formulating a strategic approach to emergency preparedness as well as utilizing the elements in the most effective way for improving the emergency preparedness phase in order to make response more effective.

3.5 SUMMARY AND CONCLUSION

This chapter has provided the context in which emergency preparedness is defined and considered in this research. The understanding of emergency preparedness provided has been useful in helping to examine the essential elements of the preparedness phase. In order to understand the application concept of emergency preparedness, preparedness models and frameworks used in the US, UK and Australia were examined. This helped to understand the theoretical and practice concept of emergency preparedness in order to identify any practice element of emergency preparedness in the UAE. Since review and evaluation of emergency management standards in the previous chapter has helped to identify that no emergency

preparedness framework or model exists in the UAE, it important to be able to identify if any of the emergency preparedness elements are being practiced in any capacity in the UAE. Furthermore, the analysis of preparedness frameworks or models and essential elements of preparedness has helped to identify gaps in the various frameworks and to better understand the emergency preparedness phase. This chapter has also provided a deep understanding of the eight elements by describing each in detail, so as to use as a basis to investigate the current state of emergency preparedness in the UAE.

Hence, in showing that a holistic examination and analysis of emergency preparedness is key to understanding the components of emergency preparedness, this chapter has helped to achieve the second and third research objectives. It has also helped to answer the two research questions which will be examined further in the data analysis chapter.

As part of the methods used for increasing the validity of data used in this research, the eight elements of emergency preparedness identified and examined in this chapter will be further confirmed via the pilot study with international experts. The aim of the pilot study is to confirm the results from literature. Therefore, once the results from literature have been confirmed, these elements will be further explored using relevant research methods and approaches for data collection, which will be discussed in detail in the next chapter.

CHAPTER FOUR
RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter is concerned with how the research will be carried out. It discusses the relevant theories and philosophies behind research methods and the various approaches and techniques adopted in order to arrive at some answers to the research questions. This section justifies the reasons behind the choices for such approaches and techniques according to how they help to realize answers to the research questions. First, some relevant philosophies are discussed, followed by the research approach, which is the qualitative method based on Saunders' research onion as shown in Figure 3.1. Subsequent sections discuss and justify the selection of research strategies based on the level of reliability and validity they can provide for this research area. The research choices and time horizon, data collection, techniques, sampling and data analysis have all been informed based on the research approach, strategies and philosophies (see Figure 3.1). The justification for selecting the choice of data collection methods used for this research is also provided in this chapter. The last section briefly explains the ethical consideration which governed this research and a summary of the entire chapter.

4.2 DEFINITION OF RESEARCH METHODOLOGY

Methodology is crucial to research such as this. In essence, methodology is a guide for solving a given research problem, and gives shape and focus to the research. Research is made up of different elements such as phases, tasks, techniques and tools. Sound methodology is important in linking these elements into a coherent whole (Sutrisna, 2012). According to Robson (1997) and Klein and Hirscheim (2001) it is the ability to link methods together which allows researchers to plan, review and maintain control over a research project. As such, methodology is vital to achieving the aims of any piece of research (Sutrisna, 2012). A series of factors must be considered in order to produce a good, working methodology and the Saunders et al. (2009) 'onion' model is a useful tool. In this regard, Saunders' onion model is adapted in this study to achieve this outcome as well as the research objectives.

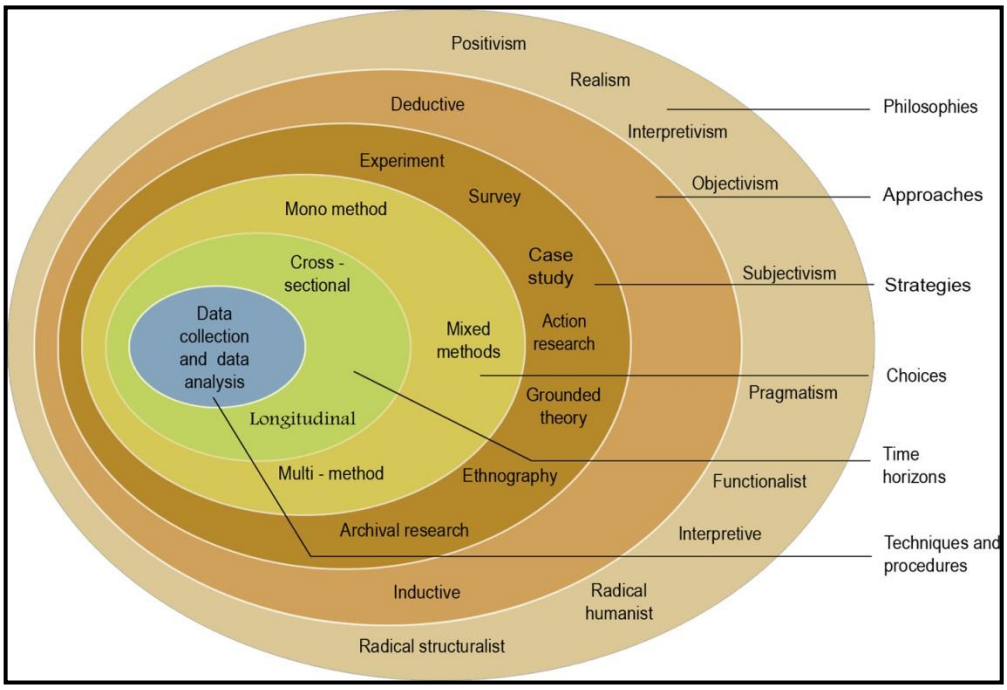


Figure 4.1 The Research Process. Source (Saunders et al., 2009, P. 138)

Saunders' methodology onion has six rings or layers of which each has options of methods from which the researcher can choose the most suitable based on the nature of the study area. Therefore, the next section will discuss the types of methods employed in this project and the reasons for their selection.

4.3 RESEARCH PHILOSOPHY

Research philosophy is the outermost layer of the 'onion' model by Saunders et al. (2009) (see Figure 4.1). Research philosophy is an essential part of any research methodology. It is the perspective on which a research area is based and the set of assumptions, concepts, practices and values which explain the research area (Johnson and Christensen, 2010). As shown in Saunders' research onion, there are ten philosophies. The next subsections explain and justify the research philosophies applicable to this research area and the ontological, epistemology and axiological philosophies are described in relation to the aim of the research, which is to investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government in order to strategically improve the current level of emergency preparedness in the UAE

4.3.1 Ontology

Ontology concerns the nature of reality and is dominated by two opposing positions. These positions, known as 'objectivism' and 'subjectivism', influence what, precisely, researchers are hoping to investigate. Therefore, an understanding of these positions is very important in any research. The objectivist position posits an external reality that exists apart from the social actors. By contrast, the subjectivist position argues that no such independent reality exists. From a subjectivist viewpoint, social phenomena are created in the perceptions and actions of social actors themselves (Saunders et al, 2009). This is a significant division which influences research. Studies conducted with an objectivist mind-set are likely to focus on events, institutions and social phenomena, whereas research conducted from a subjectivist point of view is more likely to focus on the opinions, thoughts and actions of social agents. During the literature review it was discovered that there are key human factors with implications for this research and for the preparedness phase. Therefore, a subjectivist approach, focusing on the social actors and how they perceive disaster preparedness can provide an insight into arriving at key issues that this research sought to achieve. In this regard, the subjectivist stance on the ontological continuum was adopted for this research. As the study will also involve an attempt to understand the perceptions and opinions of those already working within emergency management in general and preparedness in particular at Federal level (NCEMA) and Local level (local team of crisis and emergency management) in the UAE, it is again logical that a subjectivist approach will be taken for the study, essentially to deal with people and their feelings.

4.3.2 Epistemology

While ontology concerns the nature of reality, epistemology concerns the nature of knowledge. It relates to what knowledge can be achieved and how this knowledge can be arrived at. As in ontology, epistemology is dominated by two opposing positions: positivism and interpretivism. These positions are mutually exclusive and follow on from the ontological positions previously discussed. Positivism deals with a social reality that can be observed and measured. In the same way that a scientist can observe and measure natural phenomena, the positivist school of thought suggests that social phenomena can be viewed and measured. However, this is disputed by the interpretivism school, which stresses the differences between people's social interactions (Saunders et al., 2009). This focus on human factors closely links the interpretivism point of view to the subjectivist approach. This research equally focused on

human factor in dealing with emergency issues, therefore the aim of this research sought to investigate the state of emergency preparedness in the UAE, identify limitations and provides recommendations for the UAE government in order to strategically improve the current level of emergency preparedness in the UAE. The subjectivist approach is being favoured in this study, and as established in section 4.3.1 the research focuses on human factors which affect the preparedness phase. Therefore, the position being taken here is an interpretative one. In this study the researcher does not attempt to measure the effectiveness of any current systems but rather to understand them using the opinions of the people who are already functioning within them. As the subjectivist approach similarly claims to be dealing with feelings and thoughts, the interpretative seeks to do the same and not simply to put people into categories or assign them numbers.

4.3.3 Axiology

Unlike ontology which concerns itself with the nature of reality, or epistemology which focuses on the nature of knowledge, axiology is based on what is valued in life (Sekaran, 2006). According to Silverman (2013), axiology is the branch of philosophy that studies judgments about values. Axiology helps to decide what should be considered as valued information for a research, whether the research should be considered as valued data and how the data should be interpreted as either of value to the research area or not. However, Sekaran (2006) argued that axiology influences the choice of data collected and how the data and data collection techniques are valued. Thus, the axiological philosophy articulates the values of the data required and data collected as the basis for making judgment about the research area (Johnson and Christensen, 2010). It is therefore expected that the subjective philosophy selected for this research to help investigate the areas of problems with emergency preparedness in the UAE will ensure that quality and valued data is collected and analysed linking them to the literature review and the valued models and standards of emergency preparedness. This also means that axiology is crucial in helping to determine the values in the answers provided by officers at the Federal level in NCEMA and Local level (local team of crisis and emergency management) and how it helps to answer the research questions.

4.4 RESEARCH APPROACH

This is the second layer in the Saunders onion which shows two contrasting approaches to research: deductive and inductive. Put simply, deductive research starts with a theory and applies it to data, whereas inductive research generally begins with observed data which is used to create a theory. Informally, deductive research is referred to as a top-down approach, with a general theory applied to particular cases, while inductive research is referred to as a bottom up approach, with particular cases used to generate a general rule or pattern (Collis and Hussey, 2003, William, 2006). The main differences are summarised by Saunders el al., (2009) and are shown in table 4.1.

Table 4.1 Distinction between Deductive and Inductive. Source (Saunders *et al.*, 2009)

Deductive approach	Inductive approach
Scientific principles	Gaining an understanding of the meanings humans attach to events
Moving from theory to data	A close understanding of the research context
The need to explain casual relationships between variable	The collection of qualitative data
The application of controls to ensure validity of data	A more flexible structure to permit changes of research emphasis as the research progresses
The Operatioalisation of concepts to ensure clarity of definition	A realisation that the researcher is part of the research process
A highly structured approach	Less concern with the need to generalise
Researcher independence of what is being researched	
The necessity to select samples of sufficient size in order to generalise conclusions	

An important distinction between these approaches relates to the use of existing literature and how it guides research. As previously described, a deductive approach aims to test an existing theory. Therefore, available literature is used to pick out questions, themes, and patterns before the collection of any data. By contrast, an inductive approach creates a theory as the research progresses. Thus, themes are noted as research goes on and available literature is used to explore different topics (Creswell, 2003). Whereas ontological and epistemological positions in research are mutually exclusive, a research approach can use both deductive and inductive methods. This project will utilize both approaches. It will start with a deductive

approach, using the available literature to narrow down key elements which affect the preparedness phase. Once these elements have been identified, they will be used to create a pilot study which will test the elements in the field. Therefore, this study adopts a deductive approach in order to identify the key elements affecting preparedness from the literature. Here, the researcher will act independently of the target of the research. Then this study will move to the inductive approach when these elements have been identified in order to evaluate the implementation in the field in order to recommend strategic approach for emergency preparedness in the UAE. In this case, the researcher aims to gain an understanding of the current situation in the UAE in order to determine which areas are most problematic in terms of emergency preparedness.

4.5 RESEARCH STRATEGIES

Research strategy is the third layer in the 'onion' model by Saunders et al (2009). Yin (2003) explained that researchers in the social sciences have a variety of research strategies at their disposal and these include experiments, surveys, case studies and the analysis of historical archives. However, there are three factors which can be used to select an appropriate research strategy for researches in this field, as proposed by Yin 2003:

a) the nature of the research question
b) the amount of control that a researcher can be expected to have over the behaviour that they are investigating
c) whether the research is investigating contemporary or historical events

Table 4.2 Relevant situations for different research designs Source: Yin (2009, p.8)

Strategy	Form of research question	Requires control over behavioural events	Focuses on contemporary events
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes/No
History	How, why	No	No
Case study	How, why	No	Yes

These factors and their related research strategies are presented in Table 4.2. Based on the suggestions and arguments advanced by Yin (2009), such as when to use a particular research strategy and also in relation to the kind of questions posed - as shown in Table 4.2 - this research adopted the case study strategy as it is the most appropriate research strategy judging from the discussions above. It is recalled that the case study strategy selection is based on three conditions as put forward by Yin (2009). In this regard, it is appropriate for this research as it fits Yin's first and third conditions in seeking to provide a strategic approach for emergency preparedness in the UAE.

4.5.1 Documentation

According to Yin (2009), documentation of information helps to provide background knowledge and explanation of case study. This argument is similar to the justification for documentation provided by (Mason, 2004) who emphasised that documentation is a method essential for researchers to use to provide meaningful interpretation and context for the area being researched. This is particularly important for qualitative research which adopts research strategies that collect information about the research area and further explains the context and concept of issues peculiar to the topic. Thus, Yin (2009) states that documentation tends to be relevant to every case study topic in order to obtain reliable data based on evidence of existing information. New information can then be collected from primary sources and directed at understanding the case study better or explaining the gaps identified in the case study from the documentation review.

Therefore, this research uses documentation to further examine the emergency management standards and preparedness frameworks used in the UAE. Documentation was also used to identify the existing emergency preparedness elements in the UAE and evaluate them against elements used in the US, UK and Australia. The impact of documentation was very important to this research because by reviewing documents such as the National Response Framework (NRF) created by NCEMA in 2013, and principal planning principles for the UAE, it was discovered that the UAE lacked documentation regarding the emergency preparedness framework and elements. While the NRF is useful and important to the country, it is specific to response arrangements only and does not specify an emergency preparedness framework, systems or processes like the US, UK and Australia. It was then necessary to use the interview to focus on any possible application of the preparedness elements or the barriers to documenting or implementing them, since the UAE has adopted the UK emergency management standards. This gap made the interview very important to fully achieve objectives two, three and four, so that appropriate recommendations can be made for ensuring that effective and strategic emergency preparedness elements can be operational in the UAE, which is the last objective. Therefore, review of documents in this research played a major role in identifying specific areas where problems exist in the UAE emergency preparedness phase, which made the choice of NCEMA as the case study for this research important. NCEMA is the authority in the UAE given the mandate and responsibility to develop, review and evaluate components of crisis, emergency and disaster management standards.

4.5.2 Case Study Strategy

According toYin (2003), case study is defined as an empirical inquiry investigating a contemporary phenomenon within its real-life context. In addition, Creswell (2007) says, "it involves the study of an issue explored through one or more cases within a bounded system". From the account of Denscombe, (2008) case study concentrates on a few instances of a particular phenomenon by providing an in-depth account of events, relationships, experiences or processes occurring in that instance. It can therefore be deduced that case study allows for concentration on specific key issues to identify detailed interactive processes which could be vital to the large-scale survey, thereby providing a multi-dimensional picture of the situation under research (Remenyi *et al.,* 1998). Therefore, case study looks in-depth at one, or a small number of organisations, events or individuals, usually over time and it is particular in answering "who, why, and how" questions in management research (Remenyi et al., 1998,

Yin, 2003). Yin (2003) posited that case study is preferred to other research strategies, since phenomenon and context are not always distinguishable in real-life situations.

In addition, Crowe *et al*. (2011) explained that case study as a research strategy is used to generate an in-depth, multi-faceted understanding of a complex issue in real-life context. From the previous discussion in respect of case study it can be argued that it provides an analysis of the context and processes which illuminates the theoretical issues studied (Cassell and Symon, 2006). The explanation adduced by Easterby-Smith *et al.* (2012), suggested that case study is a flexible research strategy as it permits those who advocate single cases and those who advocate multiple cases; according to them those who advocate for single cases generally fall in interpretivist in the epistemology stance and those who advocate multiple cases usually fit with positivist in the epistemology stance. This argument was rejected byYin (2003); the discussion shows and underscores the fact that case study research strategy is capable of accommodating different research methods and techniques and suitable for the conduct of research that requires in-depth investigation of understanding perceptions of a phenomenon, as this research sought to achieve.

A. Case study design

Yin (2009) discusses four types of case study design based on a 2x2 matrix that consist of single and multiple case studies reflecting different design situations (see Figure 4.2). The following are the types of case study design:

(1) Single-case holistic
(2) Single–case embedded
(3) Multiple-case holistic
(4) Multiple-case embedded

According to Yin (2009) these classifications provide the freedom to select a case according to the nature of the research and can be used in advance before the commencement of research data collection.

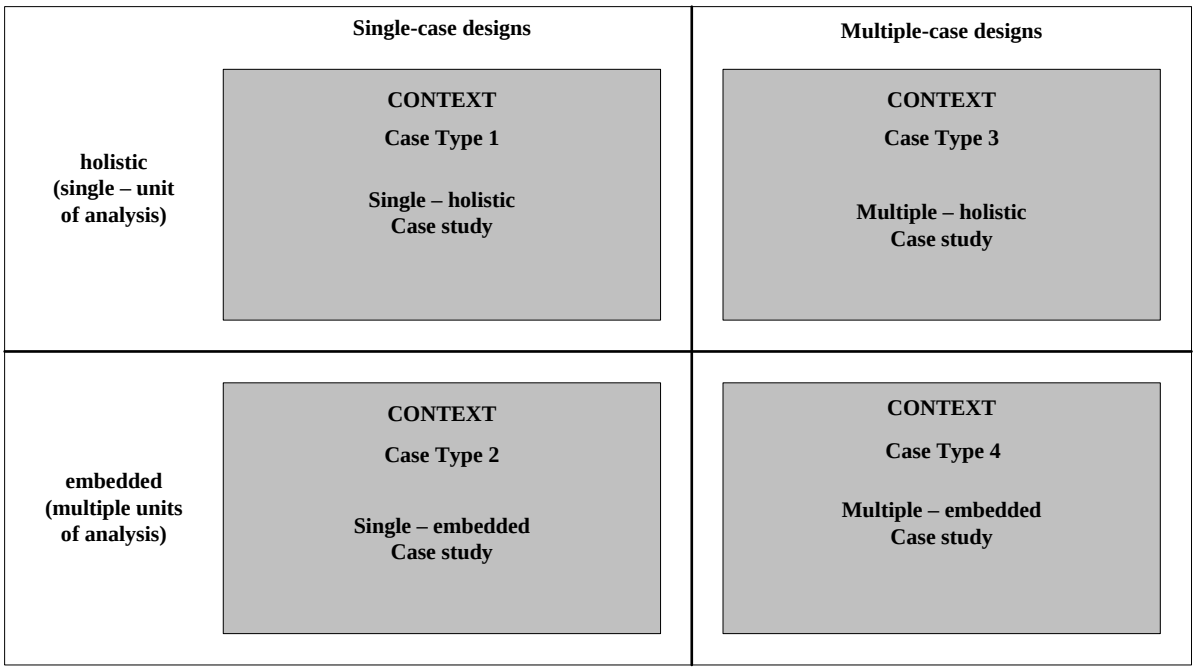


Figure 4.2 Classification of Case Study designs (Yin, 2009)

Figure 4.2 shows the classification of case study provided by Yin (2009) and, as discussed in this section, the single case study has been adopted for this research. According to Saunders et al (2009) a single case is often used where it represents a critical, extreme or unique case. A single case may be selected because it is typical or because it represents an opportunity to observe and analyse a phenomenon that has been little considered before. Secondly, a single case study can be employed if the case is extreme or unique. This research sought to develop a strategic approach or recommendations for improving emergency preparedness in the UAE. From this point of view, NCEMA is the primary institution in the field of emergency management in the UAE. However, as indicated in the research gap the UAE does not have an emergency preparedness strategy or framework, a phenomenon of this nature provides an opportunity for further analysis as argued by Saunders et al (2009). While emergency preparedness relates to activities at both federal and local levels, all the agencies involved work towards a single organisation for a common purpose. This put this research in the context of CASE TYPE 1, single case holistic (see Figure 4.2). Therefore, the choice of single case study is to ensure that the process of triangulating data and results relating to emergency management standards and emergency preparedness frameworks and elements is manageable and leads to the success of a well-designed study. Therefore, the next subsection provides a brief overview of the case study used for this research, which is NCEMA.

B. NCEMA

NCEMA was established in May 2007 within the organisational structure of the higher National Security Council to ensure the safety of lives in the territory of UAE (NCEMA, 2015). NCEMA is the major national body responsible for regulating and coordinating all efforts of emergency and crisis management. Its roles also include enhancing UAE capabilities in managing crises and emergencies. This is done by setting the requirements of business continuity, enabling quick recovery, and coordinating communication at both national and local level. Above all NCEMA helps to ensure that national plans for responding to emergencies are developed (NCEMA, 2015). Figure 4.3 shows the unit of analysis

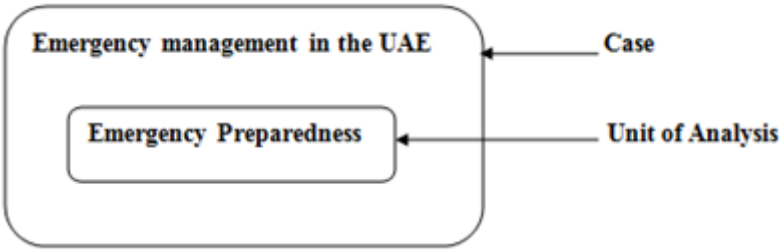


Figure 4.3 Unit of Analysis for Case Study

Therefore, NCEMA is examined as a unit of analysis for the case study which has been taken as the context for examining the emergency management standard as whole and emergency preparedness phase as the unit of analysis in the UAE.

C. Justification for case study strategy

Arguably, the phenomenon under research is a contemporary one that requires participation of experts in disasters and emergency managers in the UAE in real-life context. In this respect, this research sought to utilise case study to explore contextual issues as pertaining to elements of preparedness for emergencies or disasters. As noted earlier, the research requires understanding and perceptions of emergency preparedness in the context of the UAE. Yin (2009) argues that case study research is best used to understand situations in which different factors interact. The strength of case study as a strategy is that it allows an investigator to focus on a specific event or phenomenon and to identify the processes that underline it. Therefore, the case study strategy is best suited for the purpose of this research, as it will allow the author to answer the different types of question raised by the research and investigate the complex, interactive nature of emergency preparedness in the context of the UAE.

4.6 RESEARCH CHOICES

Research choice is the fourth layer in the Saunders onion adopted in this research. According to Bryman (2001), research approaches relate to *how* data is collected, but an equally important question is *what* data is going to be collected. With this in mind, two different methods can be defined. These are quantitative and qualitative. According to Bryman (2001) quantitative research involves the collection of data which is numerical or statistical in nature and therefore places the researcher as an outside observer. This approach is often known as the scientific method and inclined to objectivism in the ontological stance and positivism in the epistemological stance.

On the other hand, the qualitative method tends to be less concerned with numbers and more concerned with words. Rather than an outside observer, qualitative methods acknowledge that any data collected will be affected by the researchers' interaction with the phenomenon. This method is inclined to subjectivism in the ontological persuasion and interpretivism in the epistemological philosophy tradition. The findings of qualitative research are focused on uncovering the qualities of an event or phenomenon rather than measuring them statistically (Sutrisna, 2012). Saunders *et al*. (2009) identified three types of research choices which can be used to gather data: mono method, mixed methods and multi-methods. Mono method is the method which uses either qualitative or quantitative as a method of data collection (Saunders et al. 2009). Mixed method uses both qualitative and quantitative method in equal proportion while multi-methods is considered as a special case of applying two or more sources (Saunders *et al*., 2009).

These research choices are important in ensuring validity and reliability. Therefore, this research adopts a mono method which is also relevant to the qualitative method of data collection and peculiar to ontology of subjectivism philosophy, as explained in section 4.3 earlier in this chapter. To undertake mono method research using the qualitative approach, the interview was used to engage with professionals in the field of emergency management in UAE. The interview and data collection process took place over four stages, as explained in detail in section 4.8.1 later in this chapter.

4.6.1Sampling

The sampling method selected for this research is purposive sampling (Trochim, 2006). According to Trochim (2006) purposive sampling is the method which seeks specific predefined groups relevant to a research topic to participate in research. The peculiarity of purposive (from the word purpose) is to ensure that data relevant to the research area are collected from research subject experts, knowledgeable people about the research and those who are practitioners in the subject area (Trochim, 2006). So this research sought groups of people who are informed, experienced or experts in emergency and disaster management. Moreover, international participants/experts are considered to be more experienced in the field of emergency management. Therefore, this sampling method led to selecting the following categories of people as participants for this research:

- 8 international experts
- 11 experts at federal level in NCEMA
- 4 experts in local team of crisis and emergency management
- 14 experts to confirm the ranking from both federal and local levels

Profiles of the 8 international experts can be found in chapter five stage I - pilot study, profiles of the 11 experts at federal level in NCEMA can be found in section 6.2.1.; profiles of the 4 experts in the local team of the crisis and emergency management can be found in section 6.3.1; profiles of the 14 experts for ranking purposes from both federal and local levels can be found in sections 6.4.1 and 6.4.2.These profiles illustrate interviewees' country, positions and experience as part of the criteria for selection and justification of their involvement in this research.

The summary of the data collection and considerations for qualitative phase and interview is presented in table 4.3.

Table 4.3Interview Elements and Description

Elements	Description
Case study organisation NCEMA	The main focus of this research is to assess the emergency preparedness phase, in particular elements of preparedness
Sample location UAE	The criteria for selecting this case study is that it is the only authority given the authority to develop national plans for emergency management in UAE. Interviewees were selected based on their levels of experience, expertise and knowledge in the field and practice of emergency management.
Sampling strategy	The sampling method was purposive (Trochim, 2006) to select the better informed interviewees able to answer questions relating to the research objectives
Sample size	37 participants were interviewed. This number is based on availability and number of people who were able to answer and willing to participate in the research (Flick, 2011). This aligns with what Flick (2011) emphasised about informed consent and voluntary participation.
Number of interviews and tactics (45 – 60 minutes)	The interview took an average of 45–60 minutes for each interview. Semi-structured interview was used and answers which related to emergency preparedness and management as a whole were allowed.

Therefore, it can be summarised that the sources of data collection for this research are primary and secondary data. Primary data are information gathered directly from people and directly analysed and managed by a researcher or research team (Bryman, 2012). Primary data consists of information or data from interview, questionnaire, experiment, observation, ethnography, etc. Secondary data are ones which have been documented and written and can be used for reference purpose only (Trochim, 2006). Secondary data consist of data from textbooks, reports, newspapers, documentary, websites, documented standards, manual, live documents, etc. This combined source helps to link and confirm information provided during the interview to existing concepts, principles and theories of emergency management and emergency preparedness. The process of combining sources of data and analysis of such data is called triangulation (Trochim, 2006).The concept of triangulation in research refers to the use of various types of techniques to collect data within a study so that the information being gathered in the research is verified, and the researcher use this process to confirm the relevance of all data to the research area (Saunders et al., 2007, p.139). Therefore, for this research, theories and principles of EM standards and preparedness were triangulated with

documentation of the UAE's national response framework and the data collected from interview of respondents. The importance of triangulation is also evident in achieving the research objectives and answering the research questions. Table 4.4 shows to what extent each objective have been achieved and the objectives which interview will further help achieve.

Table 4.4 Research Strategies and Relevance of Triangulation

Research objectives/questions	Data collection Method	Status
1. To provide a historical overview of emergency management until current practice, including a review of emergency management frameworks established by national governments	Literature Review I (secondary data)	Achieved and documented in Chapter two
2. To examine the emergency management standards and preparedness frameworks applied in the US, UK, Australia and the UAE	- Literature Review I & II (secondary data) - Case study in the UAE - Pilot study	Achieved by triangulating results of literature review, case study & pilot study. Documented in chapters two, three & five
3. To identify and evaluate the existing emergency preparedness elements in the US, UK, Australia and the UAE	- Literature review II (secondary data) - Pilot study - Interview (primary data) in UAE	Achieved by triangulating results of literature review II, Pilot study & interview. Documented in chapters three & five
4. Explore and identify the barriers associated with the emergency preparedness in the UAE.	- Literature review I & II - Interview (primary data)	Achieved by triangulating literature review I & II and interview. Documented in chapters two, three, five & six
5. To draw recommendations for effective emergency preparedness strategy for the UAE	Critical review of gaps identified from Literature review I & II, case study, Pilot study and Interview	Documented in chapter seven

Therefore, the research strategies and methods of data collection as outlined in Table 4.4 have been helpful in sustaining the focus of this research as well as achieving some of the research

objectives and answering of questions. The triangulation has ensured that two main sources of data (primary and secondary) were used to confirm emergency management standards and emergency preparedness frameworks and elements as required for this research. Triangulation of data has helped both the data collection and analysis of findings thereby strengthening the validity and reliability of data results and discussion. Regardless of the data collection techniques, all data has been collected and treated in accordance with ethics requirements and consideration. Section 4.11 in this chapter discussions ethics consideration as applicable to this research.

4.7 TIME HORIZONS

This is the fifth layer in Saunders 'onion' adopted in this research. Time horizon is considered the time framework used for undertaking and completing a research study (Saunders et al. 2009). As indicated in Saunders *et al*. (2009) research onion, there are two types of time horizons, namely; cross sectional and longitudinal. The cross sectional time horizon is when a specific timeframe is set in which the research is expected to be completed (Flick, 2011). Longitudinal time horizon on the other hand, is one in which data is collected repeatedly over an extended period of time due to continuous changes in research content, information and area (Goddard and Melville, 2004). While the time horizon for a research area can vary, timeframe and duration for this research has followed the required timeframe for postgraduate research set out by the University of Salford. Data had been collected repeatedly every year since this research started. Secondary data were collected for the literature review and primary data for the results and discussion chapter. Therefore, this research has been carried out in a longitudinal time horizon involving a process which took place over time with primary and secondary data collections.

4.8 DATA COLLECTION AND DATA ANALYSIS

This is the final layer in Saunders 'onion' adopted in this research. Data collection can be defined as the process of gathering and measuring information based on the subject of interest or study area (Flick, 2011). Data collection is done in a systematic way of ensuring that relevant information is collected to answer questions raised about a research, test a hypothesis and evaluate outcomes (Johnson and Christensen, 2010). According to Saunders et al. (2009) research can be carried out using different methods and strategies; however, this research has

adopted the most suitable methods and strategies for qualitative, deductive and inductive approach, and case study research. This is explained in the next section.

4.8.1 Data Collection

Qualitative research interview seeks to describe and provide meanings for themes which have been identified in the social world (Trochim, 2002). For this research the common themes for which the researcher wishes to seek meanings are preparedness elements, emergency preparedness phase and emergency management. This forms the guide for the interview process. While interviews are very useful for conducting in-depth investigation, they also vary in type. Kyale (2007) explained that there are structured, semi-structured and informal interview types. The informal interviews are more of a conversation with research participants which is conducted without any pre-determined questions (Creswell, 2007).

The research allows the research participants to freely express themselves based on the research area being investigated; however the limitation of this approach is that it can lead to data collection which is not relevant to the research objectives (Gall et al. 2003). Semi-structured interviews are not as open-ended as informal interviews (Kyale, 2007). They are conducted using questions as a guide to manage the interview process and ensure that it is directed at achieving the research objectives and answering the research questions (Trochim, 2002). The semi-structure interview however, allows the research participants to express themselves or the research can probe further if information that can help the research is mentioned (Kyale, 2007). There is also structured or standardised interview which is formal and restricted to the research focus preventing the research participants from including comments which are not pre-written in the researcher's question guide (Creswell, 2007).

While this helps to answer the research questions and retain focus on the research area, it limits the ability to collect data which can benefit the research especially if the information not available in any document (Kyale, 2007). Therefore for this research, the semi-structured interview type is used because it provides reliable data which can be compared with other qualitative data (Creswell, 2007). The semi-structured interview is also used for this research because it helps the researcher to develop a keen understanding of the problems that pertain to emergency management and preparedness in UAE. This process and interview type is suitable for this research in order to identify the specific areas where problems lie and why a preparedness framework or model is not used in the UAE. Based on this explanation and

understanding, the researcher used semi-structured interview to gather information for this research using the following four stages:

The first stage was a pilot study conducted with the international experts, in order to confirm the results discovered from the literature reviewed. The confirmation was necessary in order to determine the main requirements for emergency preparedness, in particular the elements of preparedness required in the practice and implementation of the emergency management standard preparedness phase. The results of this stage are presented in detail in chapter five section 5.1.

The second stage was conducted in the UAE at the federal level (NCEMA) of emergency management in order to develop an understanding of the current practices in emergency management in general and emergency preparedness in particular by using these elements as a basis for this investigation. Figure 4.4shows the NECMA structure, highlighting both federal and local levels. This structure has helped to triangulate the results presented in this chapter in the most effective manner.

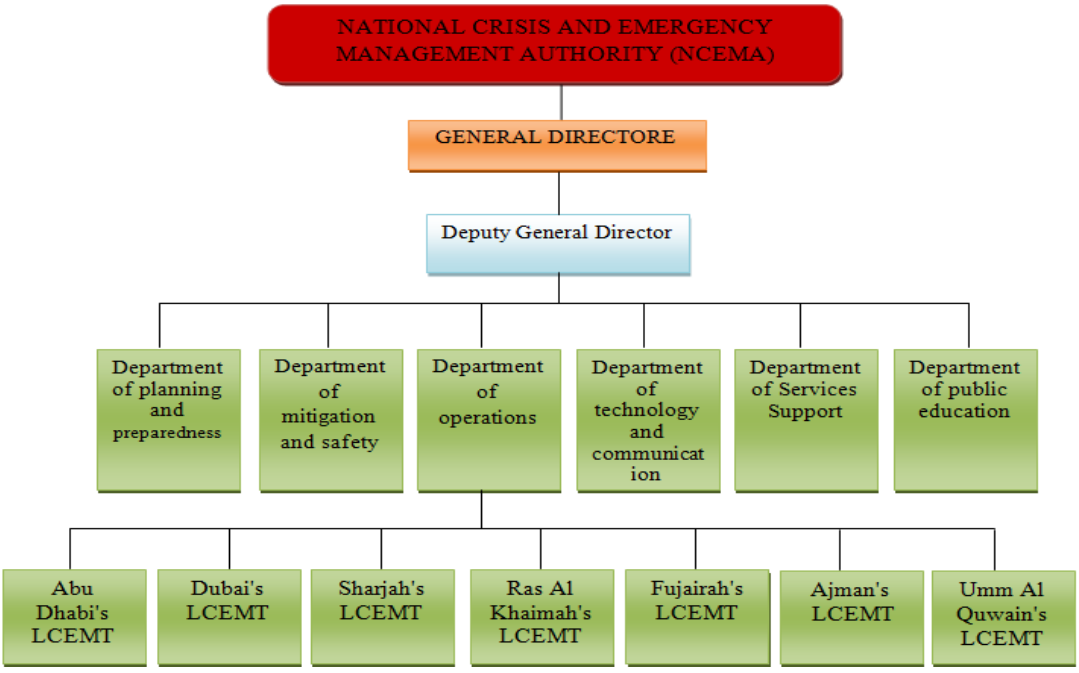


Figure 4.4 Organisation Structure for the NCEMA (NCEMA, 2007)

In the case of collecting data for this research, several steps have been followed. Firstly, semi structured, face to face, recorded interviews took place with the experts in the UAE in Arabic, subsequently transcribed and translated into English. The data was then analysed and collated,

which helped to extract major themes identified in the data. The interview findings were then analyses based on the eight elements according to the research objectives and questions.

According to the rules of the University of Salford, prior to the collection of data, an Ethical Approval form was completed, with the purpose of ensuring that information was collected in the correct manner, without exerting pressure on the interviewees. An invitation letter was also sent to the interviewees, detailing their rights. For example, for confidentiality purposes, at all three stages, letters were used instead of their names. Also, in order to give them an idea of the research aim, a letter was sent to them beforehand. Profiles of those interviewed are presented in table 4.5.

Table 4.5 the Profile for the Key People in the NCEMA.

No	CODES	POSITION	BACKGROUND INFORMATION
1	A	Director	More than 19 years experience in the field.
2	A1	Manager	More than 17 years experience in the field.
3	A2	Manager	More than 10 years experience in the field.
4	A3	Manager	More than 11 years experience in the field.
5	A4	Manager	More than 24 years experience in the field.
6	B	Director	More than 27 years experience in the field.
7	C	Director	More than 13 years experience in the field.
8	D	Director	More than 26 years experience in the field.
9	E	Director	More than 25 years experience in the field.
10	F	Director	More than 25 years experience in the field.
11	F1	Manager	Manager of the NECMA media unit since 2007.

The above profiles show that all interviewees have sufficient expertise in the field of emergency management. While the results of this stage are presented in chapter six section 6.2, the organizational structure of people interviewed is illustrated in Figure 4.5 below:

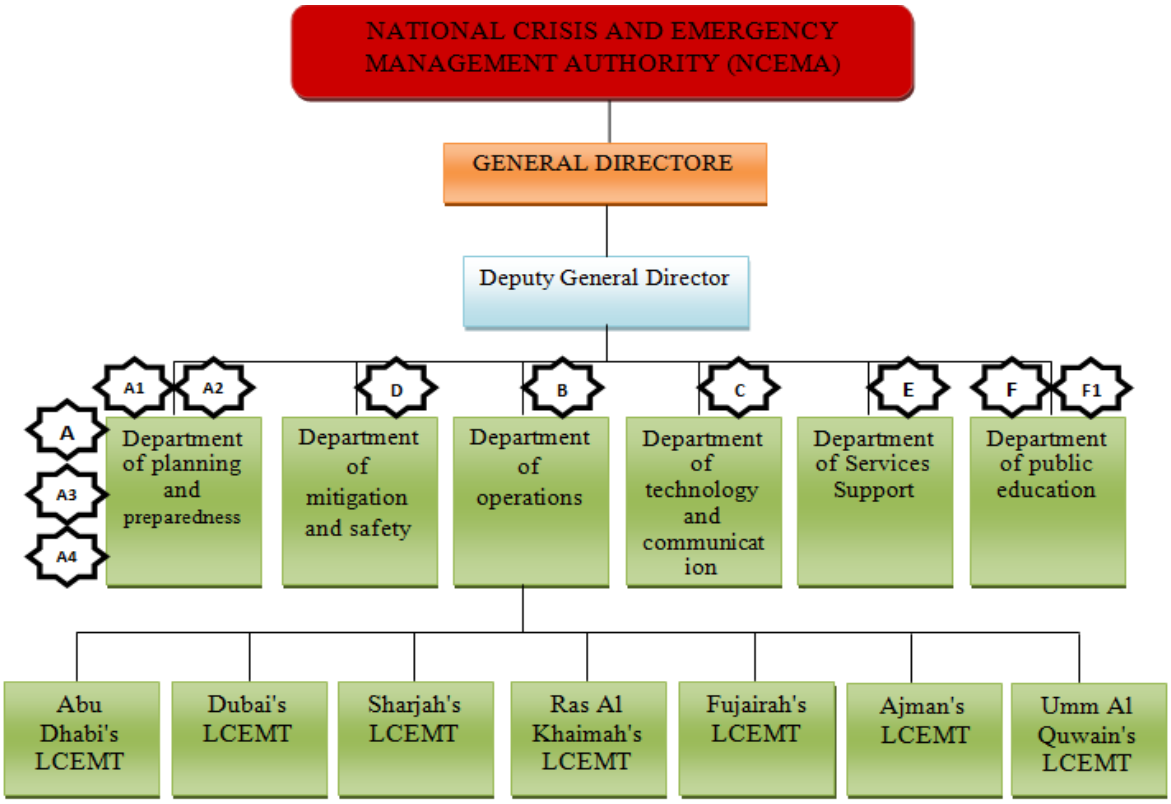


Figure 4.5 Organisation Structure for the Federal level (NCEMA, 2007)

In order to meet the people outlined in this structure, an official letter was sent by the Sharjah police to the NCEMA. This request included an invitation letter informing them of the aims and objectives of the research as well as the questions which would be asked in the meeting (see appendix D). The NCEMA sent the acceptances to the Sharjah police as well as a timetable for two weeks to meet the key people.

The third stage of data collection was at the local level with the Local Team of Crisis and Emergency Management (LTCEM) in order to triangulate responses from the federal level, and results of this stage are presented in chapter six section 6.3.2.

The fourth stage of data collection was conducted at both federal and local levels with the most suitable approach to ranking these factors in the order of importance, in order to provide recommendations for the UAE's emergency management standard which will lead to effectively implementing the preparedness stage in the UAE. The results of this stage are presented in chapter six section 6.4.3.

4.8.2 Data Analysis

As explained in all the sections of this chapter, data has been in relation to the research objectives and questions. Secondary and primary data have been collected for this research. The secondary data source is compromised of information from existing literature and standards in emergency management, reports and emergency preparedness from developed countries. The primary data is the direct source of data collected from participants using semi-structured interviews. Eight participants were interviewed for the pilot study while 11 people were interviewed in NCEMA federal level and 4 people at local level. In addition to this 14 people were interviewed for ranking of barriers. This sample size was determined based on the level of experience and knowledge about the subject area (Johnson and Christensen, 2010).

All data collected during this research, irrespective of the methods used, were analysed using content analysis. Content analysis refers to the technique used for understanding, interpreting and analysing text data in qualitative research (Stemler, 2001). This approach involves classifying the set of texts, phrases or themes which are relevant to the research questions and which should be analysed (Neuendorf, 2002). The set of words are either coded or defined as themes. So, as explained by Krippendorff (2004), the following sets of questions were answered when analysing the data for this research using content analysis:

1. Which data are analysed?

Answer: Data related only to the research questions and peculiar to emergency preparedness elements and phases which are confirmed concepts in emergency management theories and standards for practice.

2. How are they defined?

Answer: The data are defined based on the similarity or replication of the words used in the research questions.

3. What is the population from which they are drawn?

Answer: the data have been drawn from experts and experienced people in the emergency sector in the UK, US, Japan, Australia and UAE. The data have also been drawn from people working in the emergency sector at federal and local levels in the UAE, as well as from emergency literature.

4. What is the context relative to which the data are analysed?

Answer: The context relative to which the data are analysed are: elements of emergency preparedness, current emergency preparedness elements, barriers associated with emergency

preparedness. These three themes or phases form the context and guidance for the data analysis.

5. What are the boundaries of the analysis?

Answer: the boundaries of the analysis were emergency management standard, emergency preparedness elements, barriers (to implementation of EP elements) and recommendations.

6. What is the target of the inferences?

Answer: the target of the inferences was based on the axiology (what are the valued and essential concepts in EM and EP phase), epistemology (what is the knowledge known and documented in EM and EP literatures) and ontology (what is the reality in EM and EP phase) of emergency preparedness elements, phase and emergency management concepts.

These sets of questions by Krippendorff (2004) were used as a guide during the data analysis process since some of the participants were happy to provide data beyond the required data for this research. While the willingness of participants to volunteer data shows a good level of engagement (Neuendorf, 2002), excess data also needs to be properly managed to retain the focus of this research. Fortunately, the focus of this research was made possible using the recommended sets of questions from Krippendorff (2004).

4.8.3 Interview Translation

While careful consideration had been put into the research strategy chosen for this research, the interview guide also had to be written in two languages; English and Arabic. The Arabic version of the interview guide was necessary to encourage the flow of interview sessions with interviewees who preferred to speak Arabic. For sessions like this, which was 90% of the interview sessions in the UAE, the data collected were also in Arabic, which needed to be translated into the English language. In order to ensure accurate translation of words and meanings before the interview sessions and after data had been collected from the interviewees, senior colleagues in the UAE who spoke Arabic and English and who were also experts in this research area were consulted. This decision was made to ensure the accuracy of information, and that questions and meanings of data reflected the proper meanings in EM, which aligns with the explanation made by Bryman (2012). Bryman (2012) emphasised that use of language which can have several meanings or interpretations needs to be verified with experts in the field so that the researcher and participants are able to understand and use the words within the same context. Based on this understanding, the data collection process was such that it required the researcher to translate the interview guide and data script into Arabic

from English and then from Arabic back to English after the interview sessions. Therefore, all data were analysed in English and triangulated in English to maintain consistency of meaning, analysis and discussion in relation to EM epistemology.

4.9 RELIABILITY AND VALIDITY

The choice of research strategies used to gather data for this research, was intended to increase the validity and reliability of data. According to Collis and Hussey (2009), validity is the extent to which a research result is represented in relation to the actual situation. As explained by Yin (2009), there are four ways in which the quality of empirical research can be tested; namely, construct, internal, external and reliability. The construct validity uses multiple sources of evidence, established chain of evidence and case study report to ascertain information as valid (Yin 2009:41). As applied to this research, research results from case study information is established in connection to different standards, guidelines and literature reviewed in chapters two and three on emergency standards and elements of preparedness. The internal validity, on the other hand, concerns itself with establishing a linking relationship between credible causal relationships ensuring that theory is consistent. Within this research, the goal is to ensure that all information considered valid is consistent with established theories, standards and guidelines in emergency preparedness.

However, external validity helps to determine the domain (emergency preparedness) in which the research results fits and on what context it is generalised (Yin, 2009). All these means of validity lend well to the phenomena of reliability which helps to ensure that the same result is generated from the qualitative method, although this is difficult. Reliability in this research has strived to sieve interviewee bias and base their comments on standard procedures and guidelines in emergency management, in particular emergency preparedness. While it is possible for participants to add or forget information, triangulation helps to ascertain information provided by the interviewees in order to determine the validity of the information and their level of understanding about the current practice of EM and EP in the UAE. This has been done because, according to Klassen*et al*. (2009), reliability entails the degree to which the research result is credible and can be ascertain.

Although reliability in subjectivist philosophy is considered to be low compared with objectivist philosophy (Collis and Hussey,2009), reliability using qualitative method is increased by engaging professionals and experienced people in the field of emergency

management in the UAE involved in this research. Therefore, both validity and reliability depict rigor, truth and quality of qualitative method. Klassen*et al*. (2009) explain the relationship between validity and reliability in Figure 4.6.

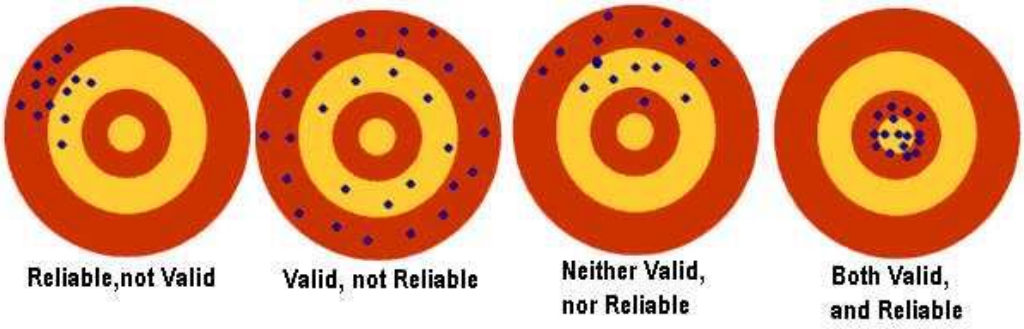


Figure 4.6 Relationship between Validity and Reliability

According to the explanation provided by Klassen*et al*. (2009) in Figure 4.6, reliable information is not valid when there are clustered details without any information hitting the target or research objective. Therefore, for the data interpretation and analysis, any information missing the target indicates the need for rethinking their relevance to this research area. This process is followed through with all the first three circles except for the last circle which shows that the information both targets the research focus and is reliable and consistently clustered around the research focus. This understanding governs the chapter on research results and discussion and how data from participants of this research are managed.

4.10 ETHICAL APPROVAL

All participants for the interview consented to voluntarily participate in this research without obligation. However, before the primary data collection process began, ethics approval stating all conditions and activities for this research area was submitted to the university. According to Cooper and Schindler (2008, p. 34) in (Saunders *et al.*, 2009) ethics is the *"norms or standards of behaviour that guide moral choices about our behaviour and our relationships with others"*. The University of Salford's policy on this matter obliges researchers to seek ethical approval prior to interviews being conducted. To maintain ethical standards and guarantee interviewee satisfaction and comfort, the following conditions were met:

- Interviews were held at times that were convenient for participants.
- They were subject to the approval of interviewees before the interview.

- Interviewees were able to stop the interview at any time.
- They were fully informed about the nature and purpose of the research.
- The confidential treatment of their personal information was guaranteed prior to the interviews.

All these conditions served as a guide throughout this research process. With respect to the secondary data collection, all sources, authors and contributors of information were duly acknowledged and well referenced. All this has been done to ensure that the result is conducted in a successful way, but more importantly so that valid and reliable data are collected, interpreted and analysed.

4.11CONCLUSION

This chapter has critically defined research methodology in order to justify the choice of methods selected for this research. The research philosophy has helped to identify the most suitable philosophy for this research area by using the Saunders et al. (2009) research onion. The onion was used as a guide to systematically explain how it has been used to determine the most suitable research approach, strategies and research choices and time horizon. By so doing, the issue of reliability and validity were explained, specifically how they will be managed in this research since it uses qualitative method to collect data. However, the choice of data collection techniques, sampling and sources for this research has been carefully considered in relation to the research objectives and questions which need to be answered and achieved for this research to be successfully conducted. While limitations of some of the methods selected were identified, they have been managed by combining methods and strictly adhering to ethics regulations which govern a research such as this. Based on the careful selection of methods carried out in this chapter, subsequent chapters, which are the pilot study and documentation, result and discussion and conclusion and recommendation chapters, were all achievable.

CHAPTER FIVE
PILOT STUDY AND DOCUMENTATION

5.1 INTRODUCTION

As mentioned in the methodology chapter (see sections 4.5.1 and 4.8.1), a pilot study and documentation will form part of this research. This section, therefore, will be divided into two stages. Stage one will be the pilot study, aiming to confirm the literature results and whether these eight elements presented in Table 3.1 are sufficiently comprehensive to be used as a basis for the emergency preparedness phase. Stage two will be the documentation, with the aim of examining to what extent these elements are covered and exist in the UAE official documentation.

STAGE I- Pilot Study

As shown in Chapter Three Table 3.1 the main findings from the literature were eight key elements affecting the emergency preparedness stage. A pilot study was seen as the suitable method to ensure that these results were reliable and valid, the aim of which was to ensure that the eight key elements discovered from literature were suitably comprehensive and covered the emergency preparedness stage, as well as ensuring that no elements were missed. Initially, difficulty was encountered in identifying experts for interview, and therefore it was considered necessary to enroll in a course at the Emergency Planning College (EPC) in York on 15-04-2013. During the course, relationships with more than four experts were developed, who agreed to be interviewed. However, since these experts were from the UK only, and since the research required a variety of ideas, it was necessary to locate further experts from other countries. An opportunity was found in May 2013, when the 18thWorld Congress on Disaster and Emergency Medicine was held in Manchester. Further experts were identified and the research was discussed. As a result, six experts were asked to take part in the research, two from the US, two from Australia and two from Japan, and they accepted.

The reason for choosing international experts rather than experts from one country is that the eight elements fundamental for this research are derived from international best practice. It was therefore necessary to seek different schools of thought in order to obtain a variety of feedback which would help to build a solid foundation for the research.

a) Profile of the Interviewees

For the pilot study, only eight people were interviewed, because there were only eight international experts that have close to ten years teaching, research or working experience in emergency and disaster management sector and related field. The aim of the pilot study was to confirm the eight elements of the preparedness phase.

Interviews began with experts in the UK since they were accessible to the researcher. They were interviewed by email, and they provided their responses by email. In the case of the six international experts encountered at the conference, interviews were conducted and recorded face to face in Manchester, UK. A draft of the interview questions can be found at Appendix (C). The profile of the international experts who took part in the pilot study is presented in table 5.1.

Table 5.1 Profile of the International Experts

CODE	POSITION	COUNTRY	EXPERIENCE
A	Manager Director of Patrick Cunningham Civil Protection Ltd	UK	22 years of experience in resilience work
B	Joint Emergency Planning Officer in Civil Protection and Emergency Management	UK	10 years working in the field
C	Director of the Centre for Disaster and Extreme Event Preparedness	US	20 years working in the field
D	Director of Health System Development in the Centre for Global Health	US	10 years working in the field.
E	Prof in Monash University Disaster Resilience Initiative	Australia	20 years working in the field
F	Dr Academic Coordinator in Monash University Disaster Resilience Initiative	Australia	9 years working in the field
G	Professor and Chairman, Dept. of Acute Critical and Disaster Medicine	Japan	10 years working in the field
H	Department manager in university hospital	Japan	8 years working in the field

The above profiles show that all interviewees have sufficient expertise in the field of emergency management with a good distribution from developed countries.

b) Data Analysis of the Pilot Study

The objective of this section is to interview eight international experts in order to see whether the elements identified in literature are sufficiently comprehensive to act as a base for the emergency preparedness stage, or whether some elements should be added or removed. To achieve this objective, just one main question was asked: ***Are these elements sufficiently comprehensive to act as a base for the emergency preparedness stage or should some elements be added or removed?*** It was found that all the interviewees were in agreement that these key elements are comprehensive enough to be used as a basis for the emergency preparedness stage. Interviewee B also highlighted the importance of culture: *"The hardest part will be embedding the elements into the "culture" or mindset of the nation and the organisations needed for resilience activities."* Echoing interviewees A and B, Interviewee C, said, *"I think you have a lot here. I think these elements are good and properly cover the preparedness stage, particularly exercise and drilling."* Interviewee D, whilst also in agreement, pointed out that *"I would advise that you should define what you mean by each element since if you do not define each element based on your perspective, you will not have a suitable and clear meaning, as you may be defining elements from a different perspective. For example, with the element of planning, you have to define this - what do you mean by planning? Do you mean preparing planning for disabled people, deaf people, old people, animals or do you mean planning as a general concept, i.e., how to prepare for all kinds of hazard. I think it is very important to clarify your definitions."* Interviewees E and F, who are academic staff at Monash University in Australia, added: *"I would add vulnerability and resilience, although they might be part of risk assessment. You do need to understand risk assessment in order to know how you can identify the vulnerability so that you can create a hazard profile."* Interviewee G was in agreement with the others in confirming that these elements are suitable and cover the preparedness stage, saying. *"I agree with these elements because they are quite appropriate for emergency preparedness and I cannot add anything more.* "Interviewee H was also in agreement with all the interviewees that these elements are suitable and comprehensive enough for the emergency preparedness stage: *"I think these elements are very important and I cannot remove any one of them because all of them are vital for the preparedness stage."*

It can therefore be concluded that all the key elements affecting emergency preparedness found in literature were confirmed by all interviewees, i.e., that these eight key elements are

sufficiently comprehensive and cover the emergency management stage, and that there is no need to add any further elements. Since these elements are confirmed, the next stage will be to examine the official documentation in the UAE covering the eight elements.

STAGE II- Documentation

The aim of this section is to examine whether or not the eight preparedness elements are mentioned in the UAE's official documents, and to what extent they are covered. Unfortunately, what was discovered was a lack of official documentation/literature covering the UAE's emergency management standard. However, the unique documentation relevant to this project is the National Response Framework (NRF), created in 2013 by NECMA. The framework, which NECMA considers as complete guidelines for the emergency management standard in the UAE, consists of four sections. The first section is an introduction talking about the purpose of the framework, its scope of application. It also outlined the strategic goal, principal of planning, the areas at risk within the UAE, and the structure of the NRF. The second section deals with roles and responsibilities: those of the NECMA, of the leading institutions, and the supporting institutions. The third section talks about the National Response System of emergency management, which consists of the levels of risk, levels of response (local, federal, national), levels of national team response (local team, federal team, national team), information systems, strategic storage and request for international support. For further information, please see Chapter 2 section 2.5, where these issues have already been covered. The fourth section talks about training exercises and update plans as well as updates to the National Response framework.

The aim behind including this documentation in the project is to discover any official information regarding the eight elements concerning the research. However, based on the information above, it is apparent that the framework acts as a general guideline for the UAE's emergency management response and hence the scope will be to discuss the documentation in general and the information relating to the eight elements in particular. The next sections will address these in detail, starting with an introduction to the framework.

Section I- Introduction to NRF

The purpose of NRF is to coordinate the efforts of national responders to adopt a comprehensive national strategy and unified emergency management in the United Arab Emirates. The general points of this framework are broken down as follows:

a) Scale of Application

The NRF's scope application expands to cover all kinds of hazards, whether man-made or natural, which influence at national level, whether identified in the risk register or not. The response to these hazards requires using all national resources and covers all of the United Arab Emirates.

b) Assumption and Considerations of the NRF

The NRF depends on the following assumptions and planning considerations:

i. The NRF should be created by the authorized agencies themselves for response to any disaster and emergency and they should do that under the umbrella of the NECMA.
ii. It should adopt strategies and mechanisms to deal with hazards resulting from the risk register and national threats.
iii. It deals routinely with incidents that occur within the boundaries and capabilities of the affected Emirate according to local legislation and regulations and in coordination and integration with the national level when necessary.
iv. There must be effective exploitation for all the efforts and expertise and capacity of government and semi-government, private sector and other agencies to prepare to face the threat of accidents and influence at national level.
v. It highlights the role of the national authority in Emergency Management in crises and disasters, in terms of response and resources available to face emergencies at national level
vi. Protection of life and property, preservation of the environment are paramount in crisis management.
vii. The degree of intervention at national level in emergency operations and crisis management to a large extent depends on the legislation and relevant laws, taking into account other factors, as follows:
    - The nature and size of the event and the location of its occurrence.
    - The direct impact of the emergency event on national interest.
    - The effect of the event on the stability of the state's political, security, social and economic interests and the need for public health and welfare.
    - If the effect of the event exceeds the scope of local control, which requires the exploitation of national resources and services, and activation of the relevant legislation.

c) Strategic Objectives of the NRF

To reflect the aims of the general framework of national response through the strategy of the United Arab Emirates, aimed at preserving the security and safety of the community and ensuring preparedness in emergency and crisis through:

i. Protection of individuals and property and ensuring security and stability.
ii. Supporting the continuity of work and restoring affected services as soon as possible.
iii. Protection of national interests and the reputation of the state.
iv. Strengthening the state's ability to face crises and disasters.
v. Enhancing community confidence in the state as regards ability to cope with crises and disasters.
vi. Providing support to local governments when necessary.
vii. Reduction of the effect of the results of crises and disasters environmentally, socially and economically, and culturally.

d) Planning Principles

The general framework of the national response depends on the main pillars representing the general principles of planning, namely.

- *Responsibility* lies with all responders at all levels, including governmental and non-governmental organizations and the local private voluntary sector. This means that these entities must have contingency plans in line with the requirements of general framework of national response and an awareness of their roles and responsibilities in emergencies and disasters. Key actors involved must also be aware of their responsibilities for taking part in regular exercises and training.
- *Totalitarianism* response planning for all hazards, all levels and types of planning, and not limited to specific incidents, as well as taking into account all the stages of the crisis and key participants in the response.
- *Participating* work to strengthen relationships between the responders, including common goals and mutual understanding leading to an effective and regular response.

- *Coping* strengthening the capacity of the responding agencies to carry out effective procedures to response for all types of risk and crises in order to reduce their impact and increase the ability to return and recover from such events.
- *Effective Communication* preparation of contingency plan supporting active communication and the use of common terminology and procedures for the delivery of the right information to the right people at the right time during emergencies or crises.
- *Flexibility* encourage contingency planning to use creative and innovative techniques that can help in building flexible operational capabilities to overcome the challenges.
- *Continuous Improvement* ensures learning from the lessons learned and the resulting training and exercises and real events in order to serve the development of planning and enhance emergency response procedures.

Therefore, this section highlighted the framework purpose, scale of application, assumption and considerations of the NRF, as well as strategic objectives, definition and planning principles. However, planning is just one of the elements confirmed by the experts as fundamental for the preparedness stage. Therefore, investigation will continue to see whether or not the remaining elements have been covered by this document.

Section II- Roles and Responsibilities

This section defines the roles, responsibilities and duties for all who participate in the preparation of the general framework of the national response. There are two levels of responsibility, being leadership teams and assistance teams, as detailed below:

a) Duties and Responsibilities of the Leadership Institutions

i. **Duties:** Based on the assignment to deal with specific hazards, according to the risks register or directives of the Supreme National Security Council at the time, the leadership institutions should use the resources provided by the assistance teams in order to deal with the event.
ii. **Responsibilities:** The responsibilities are broken down into twelve points as follows:

- Responding to specific risks according to the risks and threats, and in cooperation with the National Emergency Management Authority, crises and disasters record plan preparation.
- Coordination with support agencies to support their plans. Event management operationally and organization of resources allocated to national efforts.
- The conversion of strategic decisions of the national emergency management and crisis team to plan and oversee the implementation.
- Informing of the emergency management team of the developments of the situation through the National Operations Center.
- The Crisis and Emergency Management team to provide the federal requirement and needs of the local team to the national team through the National Operations Center.
- The use of national resources and capabilities as strategic guidance.
- Submission of the final report of the event to the national emergency management and crisis team by the National Operations Center.
- Cooperation and coordination with all concerned during crisis management.
- Achieving communication between the leadership and the resources allocated to them.
- Organising the necessary subsistence and shelter for all the support agencies on the ground during the event.
- Any other responsibilities assigned to them by the national emergency management and crisis team.

b) Duties and Responsibilities of the Assistance Agencies:

i. **Duties**: Readiness and willingness to support the leadership teams.

ii. **Responsibilities**:

- Harness the capabilities and resources based on the directives of the national emergency management and crisis team.
- Participation of the leadership in the preparation of the plans as detailed in the dangers and threats record.

- Assist the leadership in the preparation of reports accompanying developments of the event.
- Any roles and responsibilities which serve the general framework of the national response.
- Preparation of detailed plans that serve authorities' leadership and plans to build on the roles and responsibilities assigned to them.
- Directing communication and resources between operations centers.
- Readiness for any other tasks within their means to support the leadership and coordination with the National Emergency Management Authority of crises and disasters.

c) An Example for the leadership and Assistance Agencies.

There are several leadership agencies, such as NECMA, Ministry of Interior, Ministry of Health, Ministry of Energy, as well as the assistance agencies such as non-government agencies and private sector or voluntary sector organizations such as the Red Crescent:

i. National Emergency and Crisis Management Authority.

This is one of the leadership institutions when a disaster takes place. The responsibilities and duties for the NECMA are as follows:

- Participation in the preparation and coordination of plans and strategies for the management of emergencies, crises and disasters, including response and action necessary, and plans to be implemented in cooperation with the concerned authorities in the country.
- Overseeing the development of response capabilities by proposing and programming coordination at local and national levels, with periodical updates.
- Participation in the risks and threats record at national and local levels, updated periodically in cooperation and coordination with the concerned authorities.
- Crisis and Emergency Management and Disaster through coordination and cooperation with the concerned authorities.
- Coordination of the roles of concerned authorities in the country in the event of emergencies.
- Participate in the preparation and coordination of the necessary contingency plans for vital facilities and infrastructure and follow-up implementation in cooperation and coordination with the competent state authorities.

- Participation in proposing and developing policies and standards of safety, security and professional and institutional plans and business continuity standards in coordination with the competent state authorities.
- Participation in implementing criteria in order to assess the emergency and crisis management procedures in cooperation with stakeholders. .
- Preparation of the necessary studies and scientific research through the establishment of information and resources related to emergencies, crises and disasters, prediction and how to deal with it in coordination with the concerned authorities center.
- Proposal of legislation and regulations for the management of emergencies, crises and disasters and determination of the relationship with the stakeholders based on these roles.
- Any other duties and functions assigned to the Commission.

ii Red Crescent Authority

The Red Crescent Authority of the United Arab Emirates works to relieve and support the relevant authorities during a national emergency by providing humane care aspects of cooperation and coordination with the leadership and those supporting and participating in the provision of first aid and protection measure. It may also provide subsidies to those affected, to victims and people with special needs.

The Supreme National Security Council should direct the Ministry of Interior for requesting additional assistance from international communities. The United Arab Emirates Red Crescent authority should receive and store the relief materials when they arrive. The Red Crescent authority should also prepare accommodation for all those who have come for help, in cooperation with the ministries involved in the event.

This section highlighted the responsibilities and duties for two kinds of respondents: leadership respondents and assistance respondents. However, no mention is made of any of the eight preparedness elements identified by this research.

Section III: Training Plans, Tested and Updated

This section addresses specialized training for participating stakeholders, according to the roles and responsibilities assigned to them. It also presents a brief idea of the exercises

conducting by all the response agencies in order to examine how those agencies can coordinate with each other in real time of disasters.

a) Training and Plans

- The National Crisis and Emergency Management Authority issues general guideline for planning and training of the plans.
- The stakeholders involved in the national response adapt their training requirements to be compatible with the general framework of national response, in addition to assembling teams to work together during the implementation of the general framework.
- Training in skills and tactics to enable those bodies to perform with the participation of others, and if necessary sharing in the implementation of some of the subtasks.
- Emphasis on the concept of joint work culture in the minds of their crews and rehabilitation to work as one team.

b) Exercising

The National Crisis and Emergency Management Authority coordinate with all stockholders who participate in the NRF to prepare for joint exercises in order to measure the effectiveness of the plan and the extent of its success.

c) Update the General Framework of the National Response

- The framework should be updated and amended every two years at the headquarters of the NCEMA, or whenever needed.
- The framework should be reviewed under the supervision of the NCEMA with help from all stakeholders.
- Reviews of the framework should be based on lessons learned from exercises and previous events, as well as any changes in the risk register.

d) Evaluation

The NCEMA representative of the preparedness and planning department should review the NRF every two years with all stakeholders, and any changes adopted.

e) Adoption and Distribution

The NCEMA should distribute the framework to all stakeholders once adopted. It can therefore be seen that there is no mention of the eight elements in this section either.

5.2 Summary and Conclusion

As mentioned previously the National Response Framework is the unique official document covering the UAE's emergency management standard. However, it covers measurements to be taken by stakeholders concerned in case of disaster and hence the NCEMA considers this framework as a general framework for national response which should include preparedness measurements. This does not match with the literature because all of the developed countries examined in this research have a separate framework for each element of the emergency management cycle. In other words, they have a framework for mitigation, a framework for preparedness, a framework for response and a framework for recover. The fact that the NECMA considers the NRF alone as a complete guideline for the UAE's emergency management standard is incorrect. Furthermore, some of the developed countries, such as US, have adopted all of these frameworks under the preparedness phases. For example, in the US emergency management standard, for NIMS to function effectively in the response and management of incidents, the National Preparedness System (NPS) was developed to provide a template for the management of incidents and operations in support of all the five national planning frameworks: National Prevention Framework (NPF), National Protection Framework (NPF), National Mitigation Framework (NMF), National Response Framework (NRF) and National Disaster Recover Framework (NDRF) (FEMA, 2015). As a result, the emergency management cycle consists of the four main elements, ie, mitigation/prevention, preparedness, response and recovery, and the developed countries have created a separate framework for each element of the EM cycle, as mentioned above. However, this documentation shows that the NECMA adopted the NRF as a whole guideline for the EM standard in the UAE.

It can therefore be concluded that, unlike the developed countries examined in this research, the UAE's emergency management standard does not have a framework for each element of the emergency management cycle. As a result, and as already presented in the summary of the second literature chapter, the gap in this research is confirmed: that the UAE's emergency management standard does not have an emergency preparedness framework like the developed countries. Having discovered this, therefore, the next chapter will examine the current practice of the eight elements affecting preparedness in the United Arab Emirates via interviews with both federal and local level representatives.

CHAPTER SIX
DATA ANALYSIS AND DISCUSSION OF FINDINGS

6.1 INTRODUCTION

As previously mentioned in the methodology chapters, this research adopted the qualitative method. Since the research seeks views and attitudes regarding the elements discovered from literature, this is seen as the most suitable method to address these findings in the field. In order to do this, three methodological stages are used to raise the reliability and creditability for the research.

Stage one will be at federal level with the aim to explore the current situation in the UAE based on the eight elements already discovered from the literature and confirmed by the experts. As seen in the previous chapter not all of them are mentioned in the UAE's official documentation. Stage two will be at local level, with the aim being to triangulate the results discovered at federal level with those at local level to confirm the results already identified from stage one. Stage three will be at both federal and local level, with the aim of ranking the barriers discovered in the field. This will enable recommendations to be provided based on the importance of these barriers.

6.2 STAGE I- DATA COLLECTION AT FEDERAL LEVEL (NCEMA)

As mentioned in the introduction, the first stage for data collection is in the UAE at federal level. The aim behind these interviews is to explore and investigate the current practice of emergency management in general with specific focus on emergency preparedness using the eight elements of emergency preparedness identified in the literature review chapter three. This investigation provides a deeper understanding of the current situation in the UAE, with results revealing the gaps in current practice or areas which require improvements. In addition, it will answer the research questions and therefore help to provide suitable recommendations for the UAE's emergency preparedness.

6.2.1 Profile of Interviewees

Interviews were conducted in the UAE, specifically at federal level of the National Council of Emergency Management Authority (NCEMA). The NCEMA is a federal institution

responsible for emergency management in the UAE. It is the unique federal institution in the UAE which takes responsibility for coordinating the efforts among all stakeholders when disaster strikes. For more information see chapter 2 section 2.4.4. Therefore, this institution is the most suitable for the purposes of conducting interviews for the research.

As regards the number of the interviews, eleven people were chosen from this institution, since data need to be obtained from the key eligible people, and in looking at the structure of this institution - which was presented in figure 4.4 – it can be seen that there are no more than six sections led by key people in this structure. Since this institution is new and still growing, the second and the third levels are not clearly defined in terms of quality or quantity. Not only were there no more than eleven suitable people, but the information gained from them was saturated and so no further interviewees were required.

6.2.2 Data Analysis of Federal Level Interviews

SECTION I- The Emergency Management Standard within the UAE

The literature reveals that emergency management standards are implemented in developed countries such as the US, UK and Australia. It also reveals that an emergency management standard has been implemented in the UAE. However, as previously mentioned, there is a lack of references covering this area and the literature does not give a clear picture of the current situation. The review of the UAE's NRF in chapter five STAGE II the documentation simply reveals that the UAE does not have an emergency preparedness framework, but rather only a response framework. The objective of this section is to investigate to what extent emergency management standards have been implemented in the UAE and, to achieve this objective, one main question was asked of interviewees: ***do we have an emergency management standard implemented in the UAE?***

It was found that all interviewees were in agreement that the UAE has an emergency management standard but that this standard, only created as recently as 2007, still needs significant improvement to bring the UAE into line with other developed countries. For example, Interviewee A, who is the head of Planning and preparedness Department, says: "*In fact, there is no complete emergency management system existing in the UAE so far, all that exists is a beginning of establishing an integrated emergency management system. I know that recently notarization has been declared of the National Authority for Emergency and Crisis Management, and efforts are being made to develop this body through agreements with*

developed countries like the UK in order to exchange experiences. "In addition, interviewee A added," *Several developed countries have been visited in order to benefit from their experiences, and conferences have been held here in the UAE in order to compare experiences and learn about the latest in this field from the developed countries."*

This view is in agreement with interviewee B, Head of the Operations Department: *"Work is still on-going to improve the NCEMA. When the decision was made to create the NCEMA in 2007, I was one of the people sent to work with British experts at the Emergency Planning College (EPC) in the UK, with the aim of creating the foundation for the UAE's emergency management system. After I was chosen to be a coordinator with the British experts, with our focus on the third phase of the emergency management cycle, which is response. Our mission was to create a strong system for the UAE which would enable us to respond effectively to all types of hazards, and to achieve this many sessions and workshops have been organised.* Interviewee B added that these effortsare still ongoing: *"The transfer of expertise from the British to the UAE will continue until we have adopted our own system of emergency management according to the four phases, which are prevention or protection/preparedness/response/recovery.*"

It can therefore be concluded that there is an emergency management standard implemented in the UAE, that there is an agreement between the UK and the UAE governments to improve this system, but that the system is still growing and incomplete. The responses from interviewee A and B are consistent with the literature review which states that the UAE adapted the UK EM model and works in partnership with the UK to develop its EM standard and practices. However, this primary data provides new information by emphasising that the partnership between the UK and UAE is still ongoing, which indicates that the UAE acknowledges that the EM standard in the country needs to be improved. In addition, it reveals that the NECMA considers the response phases as a most important phase in the EM cycle when interviewee B said; "*Our mission was to create a strong system for the UAE which would enable us to respond effectively to all types of hazards.*" This is in accord with the findings from the document section in the previous chapter which led us to the conclusion that there is no emergency preparedness framework or system in the UAE. As a result, in the following sections the investigation will be based on the eight elements concerning this research. The focus on the eight elements is to confirm if any of the elements are used a part of preparedness efforts, which makes Section II important in order to achieve the second objective of this research.

SECTION II- The Implementation of the UAE's EM Standard

As mentioned in section I, the emergency management standard implemented in the UAE is still an ongoing process. However, it is important to examine the effectiveness of implementing the EM standard in the UAE since it was adapted from the UK. Therefore the objective of this section is to investigate each element of emergency preparedness at length by asking the question: ***How are these elements implemented in the UAE?***

Open ended questioning is used, enabling new questions to arise, hence leading to a deeper understanding of the current practice of these elements. The rest of these sections will share the results of the expert's opinion about each element of emergency preparedness as examined in the literature review chapters and presented in table 3.1.

a) Early Warning System

Chapter three, section 3.4.5 discussed and evaluated the importance of EWS and how it influences information systems. This section presents the views of the interviewees and analyses the implication of this within the current practice of emergency preparedness in the UAE.

i. Responsibility of the EWS

In order to understand who is responsible for managing the Early Warning System (EWS) in the UAE, interviewees were asked: ***Is there any specific department responsible for the early warning system?***

More than half of the interviewees referred to the National Centre for Meteorology (NCM) as responsible for an early warning system. For example interviewee D, who is the head of the department of mitigation and safety said: "*The NCM is responsible for EWS, especially in relation to natural hazards*." In a similar vein interviewee C, head of the department of technology and communications, mentioned the NCM as the main body for EWS, adding, "*The NCM serves also the central operations room at the Ministry of Interior and acts as required for matters relating to natural hazard such as floods, hurricanes and seismic monitoring, as well as sea waves and tides.* "Interviewee C added that the NCM is an important agency for providing EWS information: "*Accordingly, the NCM provides important EWS for us, especially when it comes to natural hazards.* "This view is in agreement with interview F, head of the public education department, who said: *"To my knowledge, the NCM provides an EWS for earthquakes and matters relating to meteorology, such as measuring the amount and timing of rainfall, wind direction and strength, and sea conditions, as well as the*

timing, formation and direction of hurricanes, and their impact." Interviewee A added: *"The NCM serves as EWS and in particular with regard to natural disasters and security threats.*"

Therefore, there are indicators that the main institution which provides EWS is the NCM. However, the NCM only concentrates on natural hazards. As a result, there is no clear evidence of an official body in the UAE responsible for EWS for both natural and man-made hazards. However, it seems there is lack of in-depth understanding about EWS. As explained in Section 3.4.5 in Chapter three, EWS is not simply about providing information about weather conditions (which is the function of the NCM), but it involves the duties of the emergency managers or responders to use this information to advise and put together necessary information systems, information materials, resources and equipment which can help the public and the emergency sector respond effectively and better cope with the onset of any hazard or emergency. So EWS is also about preparedness measures, actions and activities to help the emergency sector and the public prepare for natural and man-made emergency. Therefore the pattern of results for these elements shows that there is fundamental problem with understanding what EWS entails, which in turn affects its implementation in the UAE.

ii. Future Vision for EWS

In order to understand if there is any future vision for the development of EWS in the UAE, given the gap in understanding and implementing the elements, interviewees were asked: ***Why is the UAE not looking to adopt developed types of early warning system such as hazard mapping adopted in Australia and Japan, ICT used in the US and network-centric used in the UK?***

It was found that all the interviewees were in agreement with the fact that the UAE has not adapted developed types of early warning system such as hazard mapping in Japan because the threat faced by the UAE is not the same as the threat faced by Japan. For example, Interviewee A said: "*We are not like Japan, because Japan has always been affected by natural hazards, and so has developed a sophisticated early warning system. As the UAE is not so affected by natural hazards, we do not think that there is a rush to improve our early warning system immediately.* "Similarly, interviewee D agreed that hazard maps are effective in early warning, and that there are other procedures in other countries which the UAE may not adopt because of their cost and the different experiences of those countries. He says: "*Thank God we are not like Japan with its misfortunes and natural disasters, so there is no need for streams to drain rain water because a flood happens here only once in eight years*

*and this procedure is expensive. The existing procedure is through suction of water which takes a day or two",*and he added*, "The National Emergency Crisis and Disaster Management Authority (NCEMA) is currently working according to priorities, and the priority at the moment is to train the personnel of institutions and bodies on how to prepare the risk register and then based on the risk register the type of early warning will be determined, provided and installed by the competent authority.* "Interviewee C explained further, "W*e do not have a system like Japan because Japan is developed and advanced in the field of natural disasters by virtue of its geographical nature. It is continuously exposed to natural disasters and knows very well how to deal with these disasters. So if we compare our geographical position with Japan, we have to say, thank god the state of the UAE is not classified as a disaster region. For that reason, we feel that our early warning system is sufficient for the current time.*" However, when interviewee C was asked: "Does this mean that we can say, because we are not exposed significantly to natural disasters, we do not think to adopt development types of early warning systems?" The response was yes, but it also means that we unfortunately become reactive. He gave an example: "*When rainfalls were significant in the year 2011we found ourselves in trouble. Main streets were flooded, which led to a serious traffic problem owing to poor infrastructure to drain rain water. So we are now rebuilding the infrastructure for rain water drainage, at great cost to the government*."

Based on the interviewees' responses there are clear indicators that the managers do not advocate an early warning system because they did not have suitable training to make them aware of the characteristics of EWS. However, this often results in a reactive and unprofessional response. In addition, the old-fashioned mentality of the managers, with a tendency to think, "Thank God we are not like Japan", shows a fatalistic attitude towards the need for an early warning system. Hence, the system remains reactive and the wrong criteria are used to make judgments.

Therefore, this result shows consistency with lack of training or understanding of the impact of climate change and the fact that emergency is not limited to natural hazards alone. As rightly mentioned by Interviewee C, the flooding events of 2013 and 2014 and the continuous annual motorway accidents caused by fog since 2008 had significant impact. So it can be concluded that there is a major problem with perception and understanding of what EWS is, as well as what constitutes emergency/disaster. It is evident that the UAE's continuous emergency events, both natural and man-made, has exposed this limited perception of EWS.

iii. How the system works and the methods adopted in the UAE

When the interviewees were asked; ***how is the early warning system implemented in the UAE as a method of emergency preparedness and what types of early warning system exist, especially the information provided by the NCM for natural hazards?***

All the respondents agreed that there is no official policy or laws and regulations governing warning systems, but that there are simply agreements, to which two of them referred inside the UAE: Interviewee B mentions an agreement between the National Center for Meteorology and the Ministry of Interior or the NCEMA to provide information about natural hazards. Interviewee A also refers to an agreement which has recently been made between the government and the EPC in the UK to develop the UAE standard in general at all levels.

However, Interview A made reference to something significant and which might form a major part of recommendations from this research: the need for research in the field of warning systems: *"In addition we do not have enough academic researchers to conduct research in order to evaluate the situation and make recommendations to the policy makers. As a result there is lack of understanding between employees of the official principles and concepts of the emergency management standard.*" This point is in agreement with what was highlighted by the Hyogo Framework for Action 2005-2015, when they urged the need for, *"The sharing of research findings, lessons learned and best practices (R284P5.)"* However, with regards to this point, the UAE is still behind many developed countries, although it has done well to form ongoing partnership with the UK and Australia to improve emergency management standards as a whole.

Despite this, there seems to be good use of EWS in terms of using the NCM to inform the public and emergency organisations. Interviewee Explains that: "*The stakeholders are informed by phone, fax, or through a hotline, or any method that can deliver and contribute to the readiness for the hazard."* This latter reference to, "*any method that can deliver and contribute to readiness"* is confirmation of the fact that there is no official standard for EWS in this respect. This is consistent with evaluation of all emergency preparedness elements in chapter three which states that risk assessment influences approaches, equipment and methods used. The result in this section shows that the EWS in UAE is just limited to informing stakeholders about hazard. The EWS fails to warn, inform and educate using the public communication timeline evaluated in chapter three.

iv. Types of early Warning System in the UAE

When interviewees were asked about ***the types of warning system adopted in the UAE,*** all were in agreement that technological tools are useful for transmitting warnings to the public. Interviewee A adds that there are social media networks which work in cooperation with government institutions and agencies, as well as short messages (SMS) sent to ordinary members of the community, regardless of their culture or language. This is significant because these have been reported as barriers to the development of a comprehensive emergency management and preparedness framework. "*There is an agreement between the NCEMA and the National Institution of Communications, based on which the latter must send messages to all members when a disaster occurs. "*Interviewee B mentions Twitter and Face book as methods of making people aware of hazards, as well as TV, radio and seminars to inform people about a particular risk. "*There are many electronic means that we can use to deliver information to the public. People spend a lot of time browsing Twitter, Face book and social networking sites, so they are useful tools for communicating with the public*". In addition, interviewee B gives an example of how these tools were used during the last earthquake in the United Arab Emirates when he said:. "*The NCEMA account on Twitter increased from 5,000 to 15,000, indicating that there is understanding and acceptance of the public to receive information through this medium.* "However he added that, *"when developing other types of warning system, we need to take into account the multi-cultural nature of the UAE and the effect of such a multiplicity of languages, cultures, religions and beliefs on creating appropriate means to deliver information."* He gives an example of a man in his sixties*: "whilst in the UK it is likely that he will have some knowledge about crises and perhaps use of smart devices, in the UAE he is most likely uneducated and therefore difficult to reach.*"

Intelligence agency reports were also mentioned by interviewees A, D and C: "W*hat we consider as types of early warning system are the security reports, which are provided to us by the competent authorities, then sent to the Ministry of the Interior. Based on these reports the Ministry will take the appropriate decisions.*" Disasters in a neighboring country such as that in Oman in 2007 can also provide ideas for the establishment of a warning system in the UAE, according to interviewees C and E: "*If there is a tornado, flood, revolution or tsunami in a neighboring country, we consider it as a warning, and in practical terms this actually happened. The Sultanate of Oman experienced a tornado in 2007 which served as a warning to the United Arab Emirates in terms of appropriate measures to be taken.* "Interviewee D

emphasises the importance of a risk register before setting up a warning system: "*The NCEMA is currently working according to priorities which are, at the moment, to train the personnel of institutions and bodies on how to prepare the risk register. On the basis of the risk register, the type of early warning system will be determined, provided and installed by the competent authority.*" In a similar vein, interviewee A considers the risk register in itself as a warning system and observes that experts can use it to predict risk. He also mentions alarm systems in all banks for the prevention of theft.

Evidently, all the interviewees are aware of the various methods that should be used as warning systems, but these methods are not organised through official policies and regulations, nor are they under one umbrella. The result of this is a situation which is difficult to manage, and whereby it is difficult to apportion blame.

v. Future Proposals for the EWS

All the respondents observed that there are other methods that can be used in the future as early warning systems. Interviewee B refers to the Islamic culture when he mentions the minaret project: "*Thank God, because we are Muslims, there is a plan to use minarets of mosques as a method of early warning.* "Interviewee D mentions the same project, which is in the process of being used as an early warning system in the future, as well as electronic billboards at fuel stations used to broadcast information about awareness of hazards. However, Interviewee A adds that this project has not yet been implemented and is still under preparation. Interviewees A,C and F also mention electronic billboards in petrol stations. *"There is a project underway whereby the NCEMA will be able to use the electronic billboards at petrol stations to distribute any information regarding emergencies, and the good thing is it is applicable before, during and even after.*" Although not mentioned by other interviewees, Interviewee A1, who is the manager of the risk assessment unit, talked about another method which explains the warning system in the field of health, concerning diseases and epidemics: "*We have proposed to the Ministry of Health a system for registration of cases of higher than normal incidences of a particular disease*." The benefit of this system is that it is able to monitor epidemics before they escalate. According to him, in most cases a disease is not identified as possibly representing a health crisis until it is too late and there are victims. He concludes that this system would serve as an early warning system for health hazards.

The information in this section strongly indicates that EWS in the UAE is still under development, as all of the projects mentioned are still in the process of being implemented, although some, such as the minaret project, are not mentioned in the literature.

vi. Obstacles to the Implementation of an Efficient Warning System

All the interviewees were in agreement that there is no policy or regulations which organise warning systems in the UAE. They relate the main obstacles to implementation in terms of culture, language and religion, and the mentality of the older managers in not accepting new ideas. As reported by Interviewee D: "*Among them is a multiplicity of languages, cultures and religions. The mentality and attitude should change in order to accept new ideas. These are issues which are currently being faced by rescue teams in their handling of hazards.* "Efforts are made but because of the lack of regulations, they are unfortunately not made under one umbrella, according to Interviewee B: *"There are plenty of efforts made in this regard, but they are made by each institution separately, without organization through federal authorities. So all that we looking for is to bring these efforts under a single umbrella, which is the NCEMA. If we could do this we will definitely make good progress in EWS."* Interviewee A observes that there are more than 200 nationalities in the UAE, so this should be taken into account in any warning system or communication method. Also, religious beliefs among the various communities in the UAE are different. For instance, some believe that disaster is considered as punishment from God, while other communities have different beliefs. Therefore, the general opinion among all the respondents is that warning systems in the UAE need to be improved. In this regard, interviewee A indicates dissatisfaction with EWS in the UAE, observing that the UAE does not compare favorably with other developed countries in the area of EWS and that it is, *"time to think about improving warning systems in the UAE as it is one of the most important elements for readiness.* "Interviewee B observes that various warning system methods are used in the UAE to help in dealing with hazards but there is a need to improve the system by adopting the best practices of developed countries. For interviewee B, the question is not whether the warning system is good or bad because the system is working and is useful. There is simply a need to find ways to improve it: *"We can say that based on the results of disasters in terms of disruption and victims, it is necessary to look for ways to improve our system, and that is what we are doing.*" Interviewee E, who is the head of the department of services support, notes that there is a need to develop a comprehensive emergency preparedness system with a warning system to inform people about emergencies. He then describes the limited function of the National Meteorological

Center: *"The warning systems that we have in the UAE are not enough. If we take as an example the National Meteorological Center, we see that this institution has become a routine system; anyone can subscribe to the service and receive news about the weather. What we are striving to set up is a comprehensive system at state level which official bodies will be responsible to manage."*

It can therefore be concluded that there are methods of early warning used in the UAE's emergency management standard, but that it is limited to natural hazard without any consideration to other man-made hazards and emergencies. In order to have a system, policies and regulations are required which, as mentioned by all interviewees, do not currently exist. In addition, culture, religion and the language are given as barriers to EWS, which is related to the level of awareness in the community. This is something we will look into in more detail in Section (H) under Public Education. Furthermore, understanding and attitude of managers are also seen as a barrier, since there is only a basic understanding of EWS. It can also be inferred from interviewees' responses that there is no emergency organisation with the responsibility to coordinate EWS for and between the public and emergency organisations in the UAE. Hence these main barriers affect the development and implementation of EWS in the UAE.

b) Risk Management

As examined in the literature review in chapter three, information about risk assessment as an element of emergency preparedness emphasised that risks needs to be managed with special consideration to a process (CCA 2004). This section shares the interviewees' perceptions of the current practice of risk management (RM) in the UAE.

i. Implementation of RM

The objective of this section is to gain a deeper understanding of the element of risk management. To achieve this objective the question asked was, ***how is risk management implemented in the UAE as a preparedness method?***

It was found that all interviewees are in agreement that the UAE has adapted risk management in their emergency management standard. Interviewee A1mentioned that the UAE adopted the UK's emergency management standard policy of how to assess risks: *"After we visited several countries, and before we established our own standard, we discovered that the UK standard is the nearest to ours, compared to our vision, with slight changes to be made."* Regarding the way in which risk is analysed in the UAE, he explained in detail: *"We adopted*

the UK's method which assesses risk based on two axes, the first axis is to assess risks and analyse the effects on four key factors, which are the environmental, health, social, and economic factors. This gives us certain standards by which we measure the impact of risk on these aspects and then determine the average impact on these four elements. We can therefore identify any of these elements more susceptible to impact in the event of danger. The other axis is the probability of the occurrence of such risks. To determine the potential danger there is a matrix with numbers ranging from 1 to 5. The lowest (number one) refers to the least likelihood and number five to the most likely. Measurement is carried out with the help of experts from the same specialty who contribute with their experiences and historical records, which refer to the frequency of this event and the timing of replication in general. Hence hazards are classified from 1 to 5 and this gives us a clear picture of the hazards most likely to take place as well as the seriousness of impact. Consequently, it becomes easy for the planning department to develop appropriate plans for these hazards.

This response is similar to the risk management process diagram in Figure 3.2 in chapter three. This figure is the recommended process used in the UK and similar to that which is also used in Australia. However, according to the response from Interviewee A1, risk assessment in UAE applies only to hazards while the UK's risk assessment process emphasises hazards and threats (CCA, 2004:39). Interviewee C, however, defines risk assessment and risk register as two steps towards the same goal when he says: *"Firstly we define the risks (hazards) and then evaluate, and depending on the likelihood and the degree of high impact we adopt them and place them in the risk register profile.* "Interviewee A describes this in relation to two other elements, namely vulnerability and business continuity: "*Risk assessment is divided into two parts, the first being hazards faced by institutions, which is referred to as business continuity. The second part is about hazards faced by the population and the environment, where our process is similar to that of the UK standard in terms of assessing risks.* "Interviewee D described in more detail how the risk register was created, and said, "*Of course, the risk register is prepared by the same agency in the sense that the Ministry of Health is responsible for preparing its own risk register, and the same thing applies to the rest of the agencies. Our role as a committee is only to supervise the preparation of this register.*"

Therefore, there are clear indicators that the interviewees are aware of how the risk register operates by benefitting from the British standard, although they still do not have their own standard for this purpose.

ii. Laws, Regulations and Policy for Risk Management

As seen above, the information given by the interviewees indicates that they understand how risk management works as well as how it should be. However, there is evidently something missing, required to bring all these efforts under one umbrella. The objective of this section, therefore, is to investigate the policies and regulations concerning risk management in the UAE. To achieve this object the question asked was: ***Are there any policies or regulations governing risk management and what are the barriers facing risk management in the UAE?***

The responses showed that all interviewees were in agreement that there is no clear policy or regulation regarding risk assessment, nor any specific laws and regulations which determine responsibilities regarding risk assessment at federal and local level. Interviewee A1, who is a manager of the federal department (NECMA) of the risk assessment unit, indicates that the only regulation is the presidential decree which established the NCEMA and determined its duties and responsibilities. This law serves as a reference for any procedure of risk assessment: *"There is no specific policy for risk assessment; all that we have is the main policy for the NCEMA agency, and this policy acts as a guideline for particular procedures, such as that of risk assessment. Until the specific policies are ready the NCEMA will still adopt the presidential decree as a guideline, which is not professional*". Interviewee E pointed out that there are no policies and regulations governing the work of the risk register. As a result, there is insufficient awareness between stakeholders about how to prepare a risk register. Also, the absence of policies and regulations places the burden of teaching the risk register to stakeholders' employees, which is a burden to them. According to interviewee E: *"Because there are no rules on distribution of responsibilities between us and the stakeholders, we discovered that the stakeholder has no idea about how they should do the risk register, and for that reason we must design a course for our partners who have insufficient knowledge about how to do the risk register, which takes more time and effort from us."* Interviewee A mentioned that the large number of projects in this area was the biggest challenge in terms of coordinating all the various efforts between government and stakeholders in the clear absence of policies. The end result was a delay in finishing these projects on time and in a professional manner. This was confirmed when the interviewees were asked, ***Does the UAE's emergency management standard have a complete risk register at federal and local level?***

All the respondents stated that the preparation of the risk registers is underway, both at local and federal level, and that it will be ready in a few months. Interviewee C provides a historical background regarding the risk register, noting that, *"Before 2007, there was no risk register, but now it has evolved towards standards governing how to prepare these records and take advantage of them. We expect that within the next few months the risk register will be ready at both federal and local level."* In a similar vein, interviewee D mentioned that because the National Crisis and Emergency Management Authority has only recently been created, almost everything is still in the process of being worked on. *"Our risk registration here in the UAE is still under preparation because the UAE's emergency management standard itself is still developing, and the NECMA was only established in 2007. Once the risk register is finished it will help us a lot, and we can use it as a guideline for any future plans on how to prepare for hazards."*

In fact, there are clear indicators that the absence of policies and regulations result in a lack of stakeholder awareness of how to do the risk register, which costs the NECMA time and money as well as delay in submission of the risk register file. However, risk register is only one aspect of the risk management process, as explained in the CCA and other articles on risk management. It is unclear if the reference to risk register by the interviewees is used to mean the process of analysing and evaluation of risks which helps with risk decision. Risk decision is made based on whether a risk should be accepted, mitigated, avoided or reduced. Therefore, the risk management process helps to determine the appropriate risk decision (CCA, 2004; Register and Larkin, 2008; O'Brien, 2002).All these are explained in chapter three and it seems some of the factors which influence risk assessment are evident in the UAE emergency management system. These factors are listed in section 3.3.1 in chapter three and next section will help to determine which factors are barriers to implementing risk assessment in the UAE.

iii. Risk Assessment and the Barriers to its Establishment.

Based on the results above, the objective of this section therefore is to discover the factors which are barriers affecting risk management in general and in particular how to do the risk register. To achieve this objective the question was; ***Are there any barriers facing risk management in general and risk register in particular?***

It was found that all the respondents were in agreement that the main barriers in this regard are the absence of policies and regulations, since these are vital in ensuring professional

implementation of the risk assessment and developing a risk register. Among the barriers mentioned in the interviewees' responses was poor stakeholder knowledge of risk assessment and how to make a risk register. *"The personnel should have proper training; this may take a long time, which will result in a delay of the establishment of a risk register at all government levels."* The issue of training of personnel in risk assessment and preparation of the risk register as a result of conducting risk assessment and management is raised by Interviewee E, who is in agreement with the responses of all the other interviewees. Similarly, interviewee C emphasised that providing training on dissemination of information about risk and threats between government and stakeholder employees would be helpful: *"First of all we must provide training of a culture of risk assessment between the employees, whether government or stakeholder. In fact, for this culture to be implemented it needs to start from the top of the organisation, I mean the leaders and the top managers where we are still facing the old mentality and resistance to new ideas.* "Interviewee D focused on the level of knowledge of the employees responsible for carrying out the risk assessment and emergency preparedness as a whole, from both government and private sector perspectives: *"In fact, not all the employees qualify to do this job (RA) particularly in stockholder organisations. As a result the employees producing a week risk register so not have the knowledge to enable them to verify the likelihood and the high impact of risks. Therefore, in my opinion we should provide those employees with suitable training in order to increase their knowledge of performing risk assessment."* This view is in agreement with interviewee A, who added that employees responsible for doing the risk register must take on this extra responsibility in addition to their usual tasks, which puts them under even greater pressure to perform their job professionally. *"Among the difficulties we face in the preparation of the risk register is the delay in the delivery of files to the Executive Committee which is, in turn, due to the lack of trained and qualified employees to perform this task. Also, those employees are busy doing other jobs and are performing that task only in the form of extra hours. You know, in developed countries, there are specialised agencies with qualified and well trained staff to do that type of job."*

Therefore, there is sufficient evidence from the interviewees' responses that there has been a good start in applying risk management in general. However, factors such as ability to anticipate risk, lack of understanding, risk perception, and level of expertise and capacity issues seem to be influencing factors serving as barriers to implementing risk assessment in the UAE and effective emergency preparedness as a whole. These factors are listed in section 3.4.1 as factors influencing risk assessment and its implementation. While there seems to be a

lot of focus on risk register and its absence, it also appears that the fundamental approach taken by the UK, from where this standard is adapted, not fully understood in the UAE. Therefore, the implementation of risk assessment and management or any of the eight elements concerning this research still needs to be improved. Other barriers, as derived from the comments of the interviewees, such as absence of policies, mentality of older managers in terms of resistance to new ideas are peculiar to the views of the interviewees. While lack of training of staff, whether stakeholder or government, are also similar to the ones mentioned in chapter three, section 3.4.1 [C]

c) Information Sharing

As indicated in chapter three, information sharing consists of a number of elements. This section shares interviewees' perceptions of the current practice of information systems in the UAE.

i. Current Practice for Information Sharing

The objective of this section is to see how information systems are implemented in the UAE's emergency management standard. To achieve this objective the question asked was: ***How is information sharing implemented in the UAE's emergency management standard as a preparedness method?***

It was found that all the respondents mentioned different information systems tools in the process of being developed and adopted, but all agree that there are no official information systems in the UAE's EM standard. Interviewees A, A1 and C all mentioned a new type of system, called Amerigo (which gives graphical or map representation), a medium for information sharing between stakeholders, especially between emergency agencies. However, all confirmed that this system is not yet fully applied. Interviewee A said, *"this program requires all stakeholders to cooperate and upload all the information they have, such as number of employees, number of ambulances and beds. Until all this information has been uploaded we do not have a clear and complete system for the exchange of information between stakeholders."* However, interviewees C and A1 pointed out the reasons why Amerigo is still not up and running: *"There are still those with the mentality which refuses to move forward and deal with what is new. Also, training has not yet been given on the Amerigo system so no-one is qualified to use it. "*And he added that there appear to be restrictions in the sharing of information between various departments and agencies, an issue which interviewee C also mentions: *"One of the information systems that we have is GIS and*

it exists at both federal and local level, but it has unfortunately not yet been fully implemented due to what is referred to as resistance to the will of change". And he added ,*"There is another system called Amerigo and it is also not fully functioning, again for the same reasons."*

According to interviewee E there are various different operating rooms in each of the Emirates, which exist in order to exchange information between teams: *"We have operations rooms at different points, in police headquarters in each of the seven emirates and an operating room at the Ministry of Health, the Armed Forces and the* ***NCEMA****, where exchange of information is made."* In the future, he added, all these operations rooms will work under the National Operation Centre (NOC) umbrella but this will not happen until the NOC is ready because the work is still under way: *"We have the National Operation Centre (NOC) under preparation; this is the main centre which combines all of the operations rooms of the Ministry of Interior, Ministry of Defense, Ministry of Health and the Ministry of Foreign Affairs, so the NOC will work as an umbrella for all those stakeholders for the exchange of information.* "Another method of sending information, mentioned by Interviewee B,is the text messaging system: *"Regarding information systems, we have many ways of exchanging information, among which is the text messaging system, which sends information about all events to key people in the field. However, as this method becomes outdated we are looking at developing more specialized tools with the NECMA."*

Therefore, the results show that, currently, no official information sharing yet exists in the UAE's emergency management standard, besides the new medium of Amerigo which is already experiencing some resistance. All interviewees mentioned that any tools to be used for the exchange of information between stakeholders are facing difficulties in implementation. This is largely due to the fact that the systems, such as Amerigo, were brought from countries where suitable policies were already in place for their implementation, whereas in the UAE even the policies themselves are still being prepared. Furthermore, these results also show limited scope of implementing emergency preparedness elements in the UAE. All reference to information sharing by the interviewees indicates that their perception of information sharing is only between the emergency organisations. However, Canton (2007), Molino (2006), and CCA (2004), as examined in the literature review, emphasised that information sharing should be facilitated for early warning to ensure public safety between emergency agencies and the public. These results do not show the provision for information sharing in relation to ensure public safety. It only mentioned the medium used to

alert people, but share information about the procedures, direction and measures stakeholders and the general public can take to ensure public safety.

ii. Policies and Barriers Regarding Information Sharing

The objective of this section is to gain an understanding of the policies and regulations governing information sharing in the UAE's emergency management standard. To achieve this objective, the question asked was: ***do we have policies and regulations governing information sharing?***

The responses showed that all interviewees were in agreement that there is an absence of a specific policy to organise the element of information sharing for the exchange of information between stakeholders. For example, interviewee C spoke of the lack of laws and regulations which organise the exchange of information, and this being considered as a major cause of information sharing not being implemented and used as required: *"In fact, there are no laws or regulations to ensure that all stakeholders are required to exchange information."* In a similar vein interviewee E observed that the absence of these policies and regulations is not only a barrier to the use of information systems, but that some of the officials are not even aware of the importance of information exchange, and do not share information with the private sector: "*The absence of policies and regulations governing information exchange causes lack of awareness by officials of the importance of such exchange of information, as well as lack of stakeholder empowerment, especially where non-governmental organizations are denied access to information simply because the old mentality typically believes that everything should be done in secret.* "The result, according to interviewee B, is that some officials pass information based on the trust between themselves rather than according to specific laws and regulations, and he considers this as a barrier. *"Unfortunately, there are no policies or regulations to organize how the systems of information sharing should work and this acts as a barrier for its professional implementation, because sometimes you find officials passing or not passing information based on their mood. "*He adds that some officials pass information based on the depth of the relationship between them. The cultural factor is also highlighted by interviewee B when he says: "*I think that the culture of information exchange is more difficult than the process of information exchange itself."*

Therefore, there are clear indicators that there are no policies which organise the systems of information sharing within the UAE's emergency management system, which causes barriers in improving the system. In order to improve information systems, it is necessary to create

policies prior to their implementation; systems cannot be implemented properly without policies to govern and organise them – and that is exactly what is happening currently in the UAE. Furthermore, policies are important for implementation because this is one of the ways the UN, EU and all the developed countries monitor emergency management actions. Policies are also embedded in disaster mitigation and DRR strategies (UNHCR, 2007) and are part of the historical background of EM in the US, UK and Australia. Therefore, the UAE will do well in building an effective emergency preparedness to develop policies to monitor and guide the preparedness elements of emergency management.

iii. The Consequences of Barriers Facing Information Sharing

Based on the above, it is evident that there are various barriers facing implementation of information systems, i.e., lack of policies or regulations governing the system, old-fashioned mentality, perception, limited knowledge, communication and crisis of confidence between the government and the private sector – all of which result in a lack of official information systems in the UAE's emergency management standard. The objective of this section, therefore, is to discuss the consequences of these barriers to the systems of information sharing. To achieve this objective the question asked was ***what are the consequences of barriers facing the UAE's emergency management in general and the system of information sharing in particularly?***

It was found that all the interviewees were in agreement that information systems in the UAE's emergency management standard must be improved, and all of them look forward to benefitting from developed countries to improve information sharing systems. For example, interviewee D notes that because there are no policies to organise the relationship between stakeholders as regards exchange of information, there are issues of confidentiality between the government and stakeholders: *"To some extent, we do exchange information between stakeholders, but sometimes there is sensitivity. So basically what happens is that we exchange information between different teams in so far as what is needed for performing their tasks. However we do not exchange information with the stakeholders because we consider the information to be secret and therefore not to be seen by stakeholder or employees who are not involved in emergency response."* This view is in agreement with interviewee C when he speaks of two major barriers to the exchange of information: firstly, the lack of use of various applications, such as Amerigo and GIS, and secondly, the fact that some information is considered as secret and sensitive, and not to be shared with the private sector. *"No, we do not exchange information with stakeholders as we consider that the information we have could*

pose a security risk if stakeholders' employees were allowed to see it, since they are not qualified to deal with this kind of information in terms of preservation and circulation. Thus, we do not exchange information with the stakeholders before the event." However, interviewee C adds later: *"We do exchange information with the private sector during the event, so basically we give them exactly what they need to achieve the task. An example of this was seen during the recent earthquake in Iran and its impact on the UAE, where we provided the Red Crescent and other charities with information during the event."* He added: *"In my opinion we should find a way to share information with the private sector as it would help to improve our system and for this, policies are definitely required.* "Interviewee C, however, highlighted in general the current practices of information sharing implementation when a disaster occurs: *"In terms of practical implementation of information exchange between the stakeholders, when a disaster takes place each team provides the others with whatever information they have, based upon leaders' experience of previous events, so leaders use their experience from previous disasters to create a network, if you like, to exchange information between stakeholders during the event."* According to interviewees C and A ,exchange of information with the private sector occurring only during an event: *"At the moment there is no exchange of information between the government and the private sector or other partners to allow them to access information before the event; information is shared only during the event."* According to interviewee B these deficiencies in the sharing of information in the UAE's emergency management standard are forcing them to find ways to improve the current situation: *"Currently there is cooperation in the National Crisis and Emergency Management Authority between the Department of Operations Management and the IT Department, in creating databases of all existing resources or information in the UAE, such as number of hospitals, doctors, schools, mosques, apartments, sports clubs and ambulances, etc, in order to be used when a disaster takes place."* In addition interviewee B observed that for the system to be improved, it is necessary to increase the culture of information sharing between the employees, and to provide training to be taken by managers first and then employees. *"We should provide all stakeholders with training in order to increase awareness regarding the sharing of information. Ideally, we should provide these courses to the leaders before the employees because, according to my experience, if the leaders understand this culture than they will inform their employees accordingly."*

It can therefore be concluded that the results show that there are no official systems of information sharing within the UAE's emergency management standard, but rather several

projects under preparation and not yet completed. As reviewed in chapter two, different countries such as the US, UK and Australia have undergone several improvements and changes in the emergency management standards, but were only able to do this through the review of policies. Even the UN improves DRR strategies through the Yokohama strategy, Hyogo framework and the Sendai framework respectively. Hence it is important for the UAE to develop policies first and then use the policies to monitor effectiveness of emergency management standards (McEntire, 2001; Canton, 2007). This will help to identify any system failure or areas in EM standards which need to be improved, as has been the case over the years by the UN and in US, UK and Australia.

d) Planning Element

As indicated in chapter three, planning consists of a number of elements. This section shares the interviewee's perceptions of the current practice of planning in the UAE.

i. The Approach of Planning and Current Practices

The objective of this section is to understand the current situation regarding the planning element in the UAE's emergency management standard as a preparedness method. To achieve this objective the question asked was: ***what is the current practice regarding planning in the UAE's emergency management standard as a preparedness method?***

The responses of all interviewees reveal that they have a good understanding of the planning process and are aware of its importance, although they have different views of how it should be implemented. For example, intervieweeA2, who is the manager of the planning unit in the National Crisis and Emergency Management Authority, explains the planning process in detail: *"We start planning preparation following completion of the preparation of the risk register. In order to do this, we give preference to all the institutions which will be in charge when a disaster occurs. These institutions then hold a meeting with stakeholders to create a plan for certain hazards.* He gives an example: *"If the risk register highlighted a likelihood of being affected by a certain disease, then responsibility for managing this will fall to the Ministry of Health, meaning that the Ministry of Health is responsible for calling stakeholders to make a plan for this kind of hazard. "*Interviewee A1 explains in detail the meaning of planning guidelines: *"Planning guidelines are the outline of the plan which should be followed by all the stakeholders in order to create their plan. So the planning unit is the institution responsible for creating these guidelines, whilst the purpose is to provide a guide for all stakeholders when creating their plans."* In contrast with interviewee A, he explains

how plans are put together: *“To create plans, we look at security reports and all the indicators which refer to the imminence of a particular risk as well as the risk register, while those responsible for producing these plans must discuss with the stakeholder the best solution for tackling these hazards. ”*Going back to interviewee A2, he reveals that some of the Ministries establish operations rooms in their institutions: *"An operations room was set up by the Ministry of Health for this purpose. Each agency prepares its own plans.”* In addition, he explains the job description of the planning unit, and how they guide stakeholders to achieve their mission and prepare their plan: *"As a planning unit, our effort is considered to be dramatically influential as we are the only reference for all that relates to planning in the NCEMA. So that our duty is to do the fundamentals or framework if you like, for how to do the plan, and we distribute this framework to the stakeholders for them to use as guideline for their planning.”* In a similar vein, interviewee A2 explains further about the role of the planning unit in monitoring the planning activities of other agencies: *"Once an agency finishes the preparation of a specific plan, we fully review the plan, take notes and then send it to the agency which prepared the plan in order to modify it based on such observations. After that, the plan is considered as ready for use.”*

Once a specific agency has completed the preparation of its own plan, the next step in the planning process is described by interviewee A2: *"Copies are distributed to all participants in the plan in order to identify their roles, while a copy is sent to the planning unit. The planning unit is then referred to the exercises department.”* He adds: *"The exercises department then gives us feedback, which we add as a final amendment to the plan. "*Interviewee B, meanwhile, spoke of the previous planning situation, as opposed to the current situation: *"There were no plans ready in our system for emergencies before 2009, especially in the Ministry of Health when the H1N1 happened. However, we have now achieved significant improvements to our system, one of which is that we have finished preparing the first draft as a guideline for plans in the UAE, and this will be made available on the internet soon for the public. A template is even distributed to groups of trainees containing outlines of how to prepare the plans. ”*Similarly, interviewee C, in comparing past and current practices, has observed improvement regarding planning. *"In the past, plans were not updated but now, following the establishment of the NCEMA, plans are updated at least annually. Also, in the past we created our plans based on threats from outside the risk register, simply because at that time there was no risk register. Now, however, we will create our plans based on the risk register.”*

Therefore, there are indications that some of the interviewees have a good understanding of the planning process, and through their responses it appears that planning is implemented professionally in the UAE's emergency management standard. However, the continuous reference to risk register also makes the responses inconsistent with earlier responses that there is as yet no risk register used for emergency preparedness in the UAE. Interviewees B and C made reference to guidelines, while the former mentioned the existence of a template, which although it acts as a guideline for the planning process, does not apply from the start, ie, it does not specify who is responsible for doing the plan, etc. Interviewee C clearly states that there is a guideline, when he says: *"Following the establishment of the NCEMA, a new instruction was given to organize the issue of planning."* Therefore, the next section will find out what types of guidelines have been implemented. Are these guidelines adequate for organising the element of planning? This will enable us to discover whether planning is implemented professionally or not.

ii. Guidelines Governing the Element of Planning

As seen above some of the interviewees describe the planning process in a way that needs further clarification. However, only two of them mention guidelines, which are important for planning. Therefore, the objective of this section is to explore what guidelines are implemented for the planning element in the UAE's emergency management standard. To achieve this objective the question was, ***to what extent do we have policies and regulations organizing the element of planning in our standard?***

The responses showed that all interviewees were in agreement that no official policies or regulations in regards to planning have been established yet, and all that exist so far are general, undocumented instructions. For example, interviewee C pointed out that there are no specific policies, but he did mention that the process is underway: *"So far there are no official instructions or policies to organise everything in planning. However, as far as I know, there are indications that general policies for planning are under preparation but so far all we have are verbal instructions and general instructions, which are definitely not like policies."* According to interviewee A1, *"At the moment there are only the general instructions for the agencies' duty itself. As for the mission of planning, the instruction is still under preparation.* "Interviewee B highlighted the importance of policies in terms of assigning responsibility: *"there are no policies or regulations to organise planning, and that causes difficulty in discovering where the deficiencies lie and who did well and who did badly, because no rules exist for us to follow. In my opinion it is very important to make a policy for this."* In a

similar vein, interviewee E confirmed the responses of interviewees C and A1, when he said, *"I agree that policies and regulations are very important for ruling all the elements you have.* "He added that a lack of official policies to organise this issue makes it difficult to follow up on whether the implementation for planning is being done correctly or not.

Interviewee C observed that due to a lack of policies to force stakeholders to make their own planning, responsibility lies on the shoulders of the planning unit alone: *"In fact, there is no cooperation between the stakeholders and the planning unit as regards planning; because their doctrine is that the only responsibility for planning lies with the planning unit. So they do not carry out their own planning, and expect the planning unit to do it for them, because there are no policies to organize this issue."* He added that, since there are several institutions, who have to make their plans without the aid of policies, some of these institutions make plans without the risk register, and he gives an example of the Ministry of Interior: *"In talking about how the Ministry of Interior make its plan, the order comes from the Minister for the entire planning branch in the seven Emirates, all of which have been made without the risk register, since there are no risk registers ready yet in the Ministry of Interior. As a result, the decision of what type of plan should be made will remain with the leaders themselves and not based on the risk register, which in my opinion is not good as our plans should be created based on the risk register."* Unlike interviewee A, he mentions that if there were more than one official body giving orders for the plans, it would be a positive thing. *"Occasionally, the Ministry of Interior gives orders for a certain emirate to make a certain plan. This is a result of information received by the ministry concerning a hazard which may occur in this particular city. However, this risk is not included in the risk register, and I conclude that if the planning order came from a different official body this would be a positive thing."*

Therefore, there is clear evidence that there are no policies and regulations governing the elements of planning, and all that exist are general instructions, which do not arise at policy level. In addition, it is clear that when interviewees, such as interviewee C, mention receiving instructions, they mean receiving instructions from their leaders in an official meeting. As a result there is an overlap between what some of the interviewees say about official policies and the general instruction they receive from their bosses during official meetings. Therefore, the next section will investigate how this absence of policies affects the implementation of planning within the UAE's emergency management standard.

iii. Deficiency Caused by Absence of Policies and Regulations.

The objective of this section is to find out how the absence of policies mentioned above is affecting the correct implementation of planning. To achieve this objective the question asked was, ***does the absence of policies and regulations affect the implementation of the planning element?"***

All interviewees were in agreement that the absence of policies acts as a barrier for good implementation of planning. However, each interviewee had a different view of the types of barriers facing the element of planning. For example, interviewee C mentions that because there are no official policies and regulations organising the work of planning, the private sector is not involved in planning: *"In fact, we should engage the stakeholders in the preparation of plans. Unfortunately, we did not let them get involved in this because, since the stakeholders are not part of the government, we do not allow them to see secure information such as plans. The reason behind this is that there is no trust between the private sector and the government"*. According to interviewee E, the absence of policies is itself a barrier for planning, and he added that there is no stakeholder awareness of how to prepare a plan, especially in the private sectors. *"One of the barriers facing us is how to prepare plans, as the private sector is not aware of the subject of emergency management in general. It is still new to them and they believe it is solely the responsibility of the NCEMA. What is required from us is to offer training course to promote the culture of emergency management standards to stakeholders in general and the private sector in particular, in order to make them aware of this subject. However, this will cost us time and money."*

Interviewee A pointed out that because there are no policies governing planning there is an overlap between the federal and local level, leading to poor coordination when dealing with a disaster: *"I think that among the difficulties faced in the preparation of plans is that despite the development and rehearsal of plans there is still confusion and overlap in roles during the real event and even in exercises, especially where response times are concerned and action is required at both federal and local level, because there are still no rules or policies governing this issue. "*He pointed out that there is inadequate knowledge among stakeholder staff, nor do they have the time as they have their own duties to perform. *"There is a lack of adequate knowledge of the staff engaged in the preparation of plans to carry out this activity in a professional manner. In addition to that, the employees are not available for this activity, given that they have other duties related to their main position."*

It can therefore be concluded that the majority of interviewees have a good understanding of the consequence of lack of policies which govern the planning process. However, all of them were in agreement that there are no policies or regulations governing the element of planning. As a result, there are several barriers facing planning, such as stakeholders' lack of awareness of how to prepare planning, employees not available to perform planning as they have other duties, the overlap in real time between federal and local level while dealing with a disaster, and prevention of engagement of stakeholders in general, and specifically the private sector, in preparation of planning. It can also be inferred that lack of policies and limited scope of planning to instructions from immediate bosses of individuals are reasons why there are no different types of plans. According to Alexander (2002) and CCA (2004) and as explained in section 3.3.2 in chapter three, plans require legislative framework or policies to be applied; unfortunately, none of this is evident in the UAE.

e) Training Element

As indicated in chapter three, training consists of a number of elements. This section shares the interviewees' perceptions of the current practice of training in the UAE.

i. Implementation of the Element of Training

The objective of this section is to explore the current situation regarding the training element within the United Arab Emirates' emergency management standard. To achieve this objective the question asked was: ***How is the element of training implemented in the UAE's emergency management standard as a preparedness method?***

It was found that all the interviewees were in agreement that training is important as a method of preparedness. For example, interviewee B said, *"We are aware of the importance of training as a method for emergency preparedness, and we have a training unit under the department of preparedness. Also, progress is being made, for example, by virtue of the agreement between the UAE and the UK's Emergency Planning College (EPC), and the NCEMA organises courses with attribution of accreditation and certification at the national level."* According to interviewees A1and E, there are two kinds of training courses given to employees: those held in the UAE and those held outside the UAE, such as in the UK: *"We have two types of training, vocational training for all the staff (high, medium and low levels) and specialized training for employees who work in the field of emergency management. We hold specialised courses internally, carried out by specialists/experts, including some carried out by experts from the United Kingdom Cabinet Office. We either invite them to come or*

sometimes we send trainers to the UK, based on the partnership agreement between the National Crisis and Emergency management Authority and the UK Cabinet Office." Interviewee E added that he is one of those who organises these courses in the training unit of the NCEMA: *"There are internal courses held to train the employees of the NCEMA and stakeholders, and I am one of those trainers who facilitates these courses, through the training unit within the preparedness department."*

In addition, interviewee E spoke of how employees of the stakeholders have been trained: *"In the past, we were responsible for the training of non-government and private organisations but at present it is the duty of the leading agency to provide training for its staff. "*Interviewee D referred to a special case where rescue teams were sent to Canada to practice on situations in heavy rainfall. He says: *"When we had heavy rainfall in Hatta (a region under the territorial jurisdiction of the Emirate of Dubai) many people were stranded due to floods, an indication that the rescue teams and ambulance personnel lacked expertise. Such heavy rainfall occurs only once in a period of 8 years so in order to practice on similar situations rescue teams were sent to Canada."*

Interviewee A3, who is a manager of the training unit within the department of preparedness. also spoke of training courses provided to employees, whether government or stakeholder employees, when he said: *"There is training for all the staff working in the National Crisis and Emergency management Authority for the management of emergencies either in the UAE or abroad, and the NCEMA is in charge of all this at both federal and local levels*." However, he mentioned that in the past training was given to private sector and non- government organizations, although this no longer happens. *"In fact, we initially provided training for non-government and private organisations when we were working on the preparation of the risk register but now there are less and less training sessions because such organisations should themselves provide training for their staff. There is also no clear strategy for non-government and private organisations to organize a certain number of specialised courses. This serves as evidence that there are no written policies and regulations in this regard."* Interviewee A however, unlike the others, observed that there is training provided to both government and non-government and private sectors. *"Staff are trained through the organisation of training workshops in order to increase efficiency and to identify all aspects of the field of emergency management, besides sending some trainees abroad, for example to the United Kingdom. One of the most important programs for non-government and private organisations is a volunteering program, with more than 3,000 volunteers who have been*

trained and qualified to deal with the different types of risks." Interviewee C repeated the same information as interviewees A3 and E, which is that they have been providing training courses for government employees, adding that the non-government and private sector should themselves provide training for their employees.

Therefore, there is clear evidence that the interviewees are confusing trainings needs for development of skills and expertise with training element of emergency preparedness. While all the types of training mentioned by the interviewees are good, they are specialized training to develop individuals and not to train responders on how to respond specifically to risks, hazards, threats and emergencies especially those that occur in the UAE. It seems to be that the respondents do not have a good understanding of the emergency management standard and the elements comprising it. According to Alexander (2009), Dillon et al. (2009), CCA (2004) and as explained in section 3.3.3 in chapter three, the training element of emergency preparedness is decided based on risk assessment, emergency plans and exercise. Hence the type of training required for emergency preparedness is not training courses in education institutions, but practice training to prepare for emergency and disaster response as identified in emergency plans. Thus, it seems lack of policies and regulations continue to be a major source of confusion about requirements of emergency preparedness training and training needs for individual and professional development. In addition, it also seems there is a need to inform and educate the emergency sector about the emergency management standards they have adapted from developed countries, as there seems to be major misinterpretation of how the standards, guidelines and frameworks are to be understood and implemented. Unfortunately, the interviewees consider training as a preparedness method rather than as an element of emergency preparedness.

ii. Barriers to Implementation

The interviewees were asked ***what are the barriers facing the implementation of training?*** Most were in agreement that there are indeed barriers facing the implementation of the element of training as a preparedness method within the UAE's emergency management standard, although each had different opinions about what those barriers are. For example, interviewee C spoke of the non-government organisations and the private sector when he said, *"One of the barriers they face is that they do not have qualified trainers to train themselves. As a result, their training will be inadequate and their skills and knowledge will not develop, which will affect the implementation of the element of training."* He then added that

government employees in general are receiving suitable training from the NECMA and that there is development in this regard. *"In fact, I have not noticed barriers regarding the training of government employees; however what I would like to say in this regard is that if the NCEMA provided training courses for all stakeholders that would be useful, because what I see is that the NCEMA concentrates more on its own staff. There is nothing wrong with that but it would be better if they provided courses for the municipality employees, for example, because the employees of the municipalities are a good backup during disasters."*

According to interviewee E, the old mentality is a barrier within the government sector: *"Most of the difficulties we face in the process of training and development are related to the old mentality of some managers who resist change to the management methods. Such managers do not want to keep up with modern ways of managing. For example, we have thought many times about improving our services by setting up a sub-committee based on the east coast of the country, but the major problem was related to the approval and encouragement to implement those ideas which undoubtedly will improve the quality of our services."* However, as regards the private sector and non-government organizations, he mentioned that because these sectors have no professional training, they are not even aware of training, and training them will cost us time and money. *"It is worth mentioning here that in the beginning we faced several difficulties because these agencies were not ready and were not familiar with the concept of emergency management. It then took us a long time to train and rehabilitate their staff."* Interviewee A is in agreement with interviewee C that, in general, the government sector is doing well regarding training. However, the deficiency with the government sector is that there are no policies or regulations organising training. *"There are no difficulties which prevent us from training our employees because there is a large budget for this purpose. Therefore, many workshops are held throughout the year in order to raise the efficiency of our staff. However, I think we need to bring these efforts under one umbrella and that will not happen while there are no polices or regulations to organise it."* According to him the situation with the private sector and non-government organisations is slightly different: *"Maybe one of the major difficulties related to the training of non-government and private organisations is that the individuals involved in the training program are sometimes not committed to the training. They do not show a great interest in voluntary work, for example. As time passes, the use of exercises will change that."*

Interviewee A3, however, who is the leader of the training unit, highlighted that because there are no policies and regulations governing training, there is no strategy for training. *"As a*

matter of fact, there is no clear strategy regarding training adopted by both government and stakeholders, which hinders the progress of work. If any action is taken in partnership with non-government organisations and the private sector, there is usually a delay because their staff is not properly trained."

It can be concluded, therefore, that there are several barriers facing the implementation of the element of training as a preparedness method within the UAE's emergency management standard. The main barrier is the absence of official policies and regulations, which means that there is no clear strategy, leading in turn to the lack of professional implementation of the training. What is apparent here, as with most elements of emergency management in the UAE, is that the old-fashioned mentality of the managers - which affects the development of training – coupled with the absence of policies, acts as a barrier. In common with the government, non-government organisations and the private sector are not aware of training, because they are not involved in training with the government sector and they have no qualified trainers to do this for themselves.

As a result the element of training has been affected as regards implementation. The National Crisis and Emergency Management Authority must widen the range of their training to also reach stakeholders in private and non-government organizations, since all of them work hand in hand during the real time of disasters. Logically, therefore, they have to work together before the disaster in order to cope properly with the hazard. In other words, they have to train.

f) Exercise Element

As indicated in chapter three, exercising consist of a number of elements. This section shares the interviewees' perceptions of the current practice of exercise in the UAE.

i. Implementation of the Exercise Element

The objective of this section is to gain an understanding of the current practice of the element of exercising. To achieve this objective the question asked was, ***what is the current situation with exercising and how has this element been implemented in the UAE's emergency management system?***

Most of the respondents emphasised the importance of exercises and simulations through scenarios in the process of emergency preparedness. Interviewee B indicated that there is a good awareness and significant progress, with the number of departments and agencies

participating in exercises significantly increased. He adds: *"In the past, only the Ministry of Interior and the Ministry of Defence took part in exercises, but now more than 13 teams are involved."*

Exercises do not emerge from the risk register because the risk register is still in the process of preparation, a view expressed by more than half of the interviewees. For example interviewee B notes that exercises have obviously been made without reference to the risk register for more than 30 years. According to him, change should not be expected to take place overnight. Interviewee B, however, mentions that the Emirate of Dubai has had a risk register in place since 2006. For the other emirates the risk register is still being prepared, with the final aim to ensure that any exercises in the future will be derived from the risk register. With regard to solutions for requiring the stakeholders to adopt the risk register as a basis for exercise, Interviewee B states that, *"Crown Princes in the seven Emirates were asked to form a local crisis team for each emirate, the leader of which will be the police high commander. The head of the coordinating NCEMA branch in each emirate is a member of this team, and the team assigns to a subcommittee the task of preparing the risk register for each emirate."*

Interviewee D observes that exercises are based on instructions directly from the commander according to new developments that compel authorities to adopt this type of exercise. There are instructions to organise a certain number of exercises per year at local level in addition to exercises at the state and federal level, as confirmed by both Interviewees D and A. Interviewee D adds that these instructions are given because there is a need for them, and that this way of organising exercises is good because it indicates the flexibility of the exercises which are undertaken: *"Usually, we do the exercise based on instructions from the chief executive of the police, the NCEMA and the Ministry of Interior, and when our risk register is finished we will adopt this as well. However, I prefer to do exercises based on both the risk register and orders from the leaders because that gives us flexibility in performing exercises."* Interviewee A emphasises the idea of flexibility of exercises and illustrates it through a comparison between the situation in the UAE and the UK: *"Letus give the example of Manchester in the UK which has completed the preparation of the risk register. Here in the UAE, the risk register is still under preparation. When the preparation of this register is completed it will be the only reference for the exercises, but until then I agree that flexibility in the exercises is required while waiting for the preparation of the risk register to be completed."* Interviewee A notes that a special exercise has recently been introduced in the

Emirate of Abu Dhabi in which all local departments of the Emirate participated: *"Another recent exercise recently implemented was attended by more than 34 teams."*

Interviewee A1, however, mentions that exercises have to be done within the organisation itself, so that the organisation will be able to make a self-assessment regarding the plan. *"For example, we have requested the Ministry of Transportation to carry out exercises at more than 10 schools at the same time. This kind of exercise will give them a clear picture about the capacity they have and if there are any deficiencies."* Interviewee C is in agreement with interviewees A, B and D about the fact that when the risk register is finished it will be adopted as guidance for the exercises. *"It supposes that the exercises spring from the risk register. However, the risk register is still under preparation, so until now we have adopted our experiences and instructions from the leaders."*

Therefore, the indicators show that most of the interviewees believe that it is difficult to perform exercises before the risk register is finished. However, this is not consistent with standard implemented in the US, UK or Australia, where exercises are carried out to valid emergency plans (Cabinet Office, 2005; CCA, 2004). This is emphasised all across the FEMA standard, CCA legislative framework and Australia's EMA, which were all examined in Chapter three; section 3.4.2, section 3.4.3 and section 3.4.4. However, it is commendable that two interviewees mentioned different types of exercise as discussed in section 3.3.3 and recommended by Green (2002), CCA (2004) and McCreight (2011). Thus, it seems that the emergency management standard in the UAE is not fully understood.

ii. Procedures and Barriers to Designing Exercises

In order to confirm the procedures for designing exercises and writing scenarios. Interviewee A4, who works as chairman of the exercise unit, states that following completion of the preparation of plans the exercise unit starts designing exercises at national level. He explains further the importance of exercises in monitoring and controlling risks at different levels: *"Our duty starts when the plans have been done. So we take the plans and we start to design the scenarios based on these plans for exercise purposes.*

Interviewee A1, however, explains that before we start to prepare for the exercise, we should ask the relevant parties to list the resources they could provide during the event, so that they can be included in the scenario. The final document they obtain is the perfect way to deal with the event because the scenario is issued by the competent authorities. *"Scenarios are written*

in close collaboration with each of the parties involved in the exercise with the purpose of showing them the risk and asking them about the resources and assistance they can provide."

The writing of the scenario is monitored by the assessor who receives information from the competent authorities and provides feedback as to the quality of the exercises. Interviewee A4 explains conditions to be met by the assessor: *"He must have enough knowledge of the area. He should also belong to the institution within which the assessment is made and not to a different institution. For example, an assessment made within the Ministry of Health cannot be made by an official from the Ministry of the Interior*. "He goes on to say: *"The assessor collaborates with the competent authorities, and has an important role in the preparation of the scenario as they serve as a reference for him."* The assessor gives feedback through observations about the shortcomings he worked out in the course of the assessment and the final document, which takes into account the observations of the assessor, is distributed to all parties involved in the exercises in order to learn from mistakes.

In his response, Interviewee D focused on all the advantages of exercises: *"Exercise is an opportunity to examine the shortages of and deficiencies in the plans. It is also an opportunity for the teams to use the equipment, especially if it is new equipment and it enables the rescue teams and management teams to deal with the risks identified through practical scenarios.* This statement by Interview D aligns with the discussion about the importance of exercise in chapter three, section 3.4.3[A]. Interviewee A4 mentions that there are barriers faced while preparing the exercises, such as the time factor: *"Sometimes they give us just one month and it is not sufficient for us to contact those who will participate in the exercise. It is also not possible in such a short time to introduce the idea of the exercise, invite the participants for a debate and ask them to make amendments."* He also notes that there is no specific number of exercises during the year because exercises are made based on administrative instructions. The procedures on how to implement those exercises are under preparation, he added, and the reason is that there are no laws and regulations governing exercises.

In addition, Interviewee C highlighted that the "old school" leaders do not pay sufficient attention to the subject of exercising because they believe it to be a waste of money and time and, as a result, they do not cooperate with stakeholders during exercises. He gave an example: *"As a representative for your institution and coordinator in the operating room during the exercise, you may receive an order from the leader of exercises that you have to provide all participants with a quantity of water tanks, tents and generators. When you*

transfer this order to your boss, he will basically refuse this order because he has no budget to cover it. In my opinion, the reason behind that is that there are no clear policies and regulations for this, which indicates that the plan itself is deficient."

It can therefore be concluded that the responses of the interviewees show that, on the one hand, there is a good knowledge of designing and writing scenarios in relation to the other elements of preparedness such as planning and risk assessment. On the another hand, however, they highlight that there are barriers facing the exercise element, such as the lack of policies and regulations, the "old school" mindset of managers, the delay in submitting exercise programs, and the lack of references for writing exercises.

g) Organise/Equip Element

As indicated in chapter three, organise/equip consist of a number of elements. This section shares the interviewees' perceptions of the current practice of organise/equip in the UAE.

i. The Current Practices of the Organise/Equip Element

The objective of this section is to gain an understanding of the current situation of organize/equipment within the United Arab Emirates' emergency management standard. To achieve this objective the question asked was, ***what are the current practices of the element of organise/equipment as a preparedness method?"***

It was found that all the interviewees were in agreement that organise and equipment should start immediately after planning has been done by the planning unit. For example, Interviewee A3 pointed out that based on the plan, equipment requirement is assessed in order to send it to the federal government: *"The inventory of resources is made immediately after completion of the plan to determine whether there is any shortage. Then the relevant agency for the provision the resources is contacted - which will be the federal government - in order to compensate for such shortage."*

This differs from one emirate to another, as interviewee D indicates that it is the NCEMA which is in charge of the assessment of the situation and provision of equipment, if needed in case of a hazard. He also explains the procedure followed to assess the situation and submit the application to the federal government: *"At the moment our main task is to identify the needs of the emirate via local emergency management teams existing in each emirate, in*

terms of equipment based on the risk register, and submit them to the federal government to provide this equipment. "Interviewee B explains in detail how they identify their resources, saying: *"Identifying resources involves identifying the type of danger, then identifying the resources required to deal with this danger during the incident becomes easy. For example, if the risk is related to a plane crash on a gas pipeline and we want to prevent this risk, the procedure then will be not to allow the passage of any aircraft over the gas pipeline. However, if the goal is to minimize losses during the disaster, then the procedure will be not to allow the passage of any aircraft at a specific level above the wells. It should be noted that we identify the required resources based on the nature of the expected hazard."*

However, unlike the others, Interviewee C said: *"In fact, there is no special equipment for specific types of risks at the moment because as we have said there is no risk register so far in order to use as a guideline. Based on the risk register we can make a perfect plan, based on which we can identify exactly what kind of resources we should request.* "Interviewees E and A1 were in agreement with interviewee F as regards when preparation of resources should begin: *"Following completion of the preparation of the plan by the relevant agencies, we determine the operational requirements for the activation of this plan. We start with making an inventory of the equipment and take the necessary precautions required for the operating of the plan. This enables us to know whether there is a shortage in resources. If so, the leading agencies provide equipment to compensate for such shortage."*

Therefore, it is clear that based on the interviewees' response most are aware of the 'organise and equip' process, and in particular, Interviewees E, F and D. However, Interviewee C indicates that up to now there is no official implementation of organise equip within the UAE's emergency management standard because the risk register is not yet ready and therefore no guidelines are available. It also seems that the central role an emergency plan plays in enhancing the effectiveness of elements of preparedness is confused with the purpose of a risk register. A risk register is document where risks are recorded and is frequently reviewed to ensure that risks are being appropriately managed (Heldman, 2005). According to Alexander (2011), a risk register – also known as a risk log - is an important risk management tool. With this understanding, the risk register is simply a tool under risk assessment which is an element of emergency preparedness. This means that the risk register makes risk assessment and management more effective and not the whole of emergency preparedness, because other emergency preparedness elements need to be combined to make emergency preparedness more effective. Regardless, the picture is not clear about the quality of the

application of organise/equip. Thus, the next sections investigate how organise and equip is carried out without policies and regulations.

ii. The Policies and Regulations for Organise/Equip

As mentioned above, the objective for this section is to investigate further the element of organise/equip, and to gain a deeper understanding of the level of quality of application of this element. To achieve this objective, the question will concentrate on policies and regulations, so the question asked was, ***To what extent do we have policies and regulations in the UAE's emergency management standard ruling the element of organise equip?***

It was found that all the respondents agree that there are no policies and regulations regarding equipment and that there are only administrative instructions. According to Interviewee D:*"Thereare no written laws and regulations from A to Z which include the measures imposed; instead there are only administrative instructions. However, our mission at the present time is to determine the suitable resources based on the available plan and our experience".* In a similar vein, Interviewee A1commented: *"There are no written procedures which define the responsibility of a specific party to provide these resources."*

Interviewee A highlighted that there are no official roles to organise the element of equipment, but instead there is an agreement with the stakeholders to assist with equipment in case of specific need: *"There is an agreement made in advance with the stakeholders in order to provide us with equipment in times of disaster.* "Interviewee D observes that there is cooperation between the cities regarding exchange of resources, *"such as when the high waves struck the east coast of the UAE in 2006. In this disaster the equipment was sent from different cities to the east coast to support them in dealing with this disaster. In addition, there is an agreement with the private sector at local level to provide us with resources, such as volunteers, cars, experts, etc."*

Regarding the absence of official policies and regulations Interviewees D and A highlighted the importance of safety of individuals and teams in instructions from commanders: *"We receive an order from our leaders to consider the safety of individuals and teams who are involved as one of their priorities. Consequently, we provide all the safety equipment for the rescue teams to ensure that they do their duty in a safe environment.* "In a similar vein, Interviewee A states that they provide the rescue team with safety equipment because their safety is a priority.

Interviewee C observes that when disaster takes place, what is used is existing equipment which, he believes, causes a deficiency in capacity for dealing with the disaster: *"In fact, when disaster happens, we cope with what we already have in terms of equipment and then, while coping with the disaster, there is a team doing assessment of the equipment needed. In my opinion this causes panic for the rescue team and can be considered a barrier."*

Therefore, there is clear evidence that there are no policies and regulations for organising the element of organise equipment, rather the adoption of administrative instructions. In addition, there is an agreement between the stakeholders, private sector and the cities in order to cover the shortage of equipment during the disaster. As a result, even a matter as important as safety of rescue teams is reactive and based on administrative instructions, without any concrete preparation ahead to prepare for emergencies which will surely occur. Whilst being unprofessional, this clearly shows an absence of strategy in preparing for future hazards, and this lack of equipment represents a deficiency in the UAE's emergency management standard, which becomes a barrier.

iii. The Obstacles and Barriers Facing the Element of Organise/Equip

The interviewees were asked, ***Do we face barriers in the element of organise/quip and, if so, what are these barriers?***

It was found that all interviewees were in agreement that there are barriers which face the element of organise and equip as an element of preparedness in the UAE's emergency management standard. However, each of them had a different view regarding this issue. For example, Interviewee B observed that the absence of policies and regulations is caused by the lack of an official body responsible for organising equipment. *"We face the problem of the distribution of tasks and responsibilities in the sense that the responsibility in providing resources is not clearly determined. In other words, there are no rules which determine which agency is responsible for the provision of resources needed. The decision is discretionary and is taken by the leader.* "According to interviewee E, there are several barriers facing the 'organise and equip' issue:

- *"Lack of proper assessment of existing resources as it is through the assessment that we identify the resources that need still to be provided. This is also due to the lack of experience.*
- *Lack of a guide on how to do the assessment to determine the resources needed, either in an informal way or after receiving instructions from the managers*

- *The provision of the needed resources is particularly problematic, because if the same resources can be provided by more than one agency then each of the agencies relies on the other to provide it.*

Also, there are no written procedures on who is responsible for the provision of resources."
In a similar vein, interviewee F observes that lack of experience and training leads managers to make wrong decisions: *"The inability of managers to do the actual assessment of the resources required brings us back again to the lack of training and experience. For example, you tell a security official that we should put a security fence around a power plant. He replies that it is not necessary even if he knows that it may be exposed to acts of sabotage."*

It can therefore be concluded that based on the interviewees' responses there is a general awareness among most of the interviewees regarding the equipment process, and that the lack of a complete risk register acts as a barrier. In addition, the absence of policies and regulations leads mangers to give employees administrative instructions and to make temporary agreements with stakeholders and the private sector for providing equipment during a disaster. Furthermore, the absence of policies and regulations creates barriers to the implementation of the element of equipment, which are:

- There are no rules which determine which agency is responsible for the provision of resources needed
- There is insufficient knowledge to enable managers to make proper assessment of the resources required
- If the same resources can be provided by more than agency then each of the agencies relies on the other to provide it
- Lack of training and inexperience of some of the managers.

Thus, there is no specific standard in the UAE regarding equipment provided or used. Furthermore, the inability to use knowledge of emergency preparedness and information for responding to past emergencies in the most appropriate way to mobilise and organise required equipment for EM continues to make EM inadequate in the UAE.

h) Public Education

As indicated in chapter three, public education consists of a number of elements. This section shares the interviewees' perceptions of the current practice of public education in the UAE.

i. The Current Practice of Public Education

The objective of the section is to investigate current practices of the element of public education within the UAE's emergency management standard. To achieve this objective the question asked of the interviewees were, ***What is the current practice of the element of public education as a preparedness method?***

It was found that all the respondents highlighted the importance of public education in preparing for disasters as an element of preparedness, although they talked about this issue in different ways. Interviewee F, who is the head of the department of public education, gives a brief idea about his department's mission and says simply that there is still work to be done because the NCEMA is still new, and that their mission is to act as coordinator between all the stakeholders to deliver the media messages throughout the country in an ideal way. *"Generally, in relation to public education, within the national emergency response framework, we have procedures for how to educate the public of hazards. The mission of these measures is to unify the media message in the case of disaster. To achieve this, we created subcommittees and the example for these committees is the National Committee for Overall Awareness. This committee consists of all stakeholders at federal level, and its mission is to brainstorm to come up with innovative propaganda ideas to consolidate the concepts of crises and emergencies among the public.* "Interviewee D provides more details about the department concerned with public education within the NCEMA: *"Within the NCEMA is a department concerned with public education. This is in addition to personal efforts by other institutions to spread the culture of awareness, and I believe the efforts will be consolidated so that the situation will be better than it is now."*

Interviewee E pointed out that efforts have been made by NCEMA for educating people; however these efforts are still not enough. According to him: *"To educate the public, the NCEMA benefits from educational programs organized at federal and local level. For example, there is a program organized at these levels and circulated to all schools in the state".* He added: *"The aim of the program is to educate and train students on how to behave in case of an earthquake, so that they understand what is required of them in such a situation. "*In a similar vein, interviewee D highlighted the effort made by NCEMA to educate people in the cities already effected by disaster, such as Fujairah and Kalba.*"In terms of educating the public, the NCEMA has led campaigns to educate the public in areas previously exposed to crises, including the emirate of Fujairah and Kalba city. We have organized workshops for*

non-government and private sector organizations and are planning to increase their number in the future."

Interviewee A observes that public awareness is taken into account as a priority in the process towards the establishment of the UAE emergency management standard. However, in his response he points out that the efforts are not well organised between federal and local level in terms of educating people in how should they act in case of disaster; as a result coordination between these two levels of government is inadequate. *"It is not quite clear how to educate the public, because roles are overlapping as efforts are distributed between the local authorities (Emirates), and the federal level, such as the Ministry of Education and the Ministry of Communication, and therefore each of them makes their own plan for how to educate the public. In my opinion this is evidence that there is no clear strategy for public education within the UAE's emergency management standard."*

Therefore, it is clear that there is a head department of public education, although all the interviewees are in agreement that there is more work to be done and efforts to be made in the public education issue. However, although NCEMA has been founded as the authority responsible for public education as well as emergency management coordination in the UAE, there is still no clear strategy for public education. This creates an overlap between federal and local government.

ii. Methods of Public Awareness in the UAE

The objective of this section is to further investigate the methods used for the purpose of public education in the UAE. To achieve this objective the question asked was, ***What awareness methods for public awareness in the UAE's emergency management standard and do these methods suffice?***

It was found that all the respondents confirmed that efforts are being made in this regard; however they are mostly insufficient and require significant improvement. Interviewee C explained current practices implemented as awareness methods in the UAE: *"All programs for educating the people in how they should act in a disaster are organised by the Civil Defence and as far as I know are directed to students in schools. However, there are no official instructions or policies, and these programs take place only when there is a ceremony in the school."*

According to interviewee F1, who is an employee of the Department of Public Education, there are various types of programs implemented for the purpose of educating people: *"We made a gallery about awareness and education, so that when the students visit this gallery employees of the NCEMA explain to them what people should do in case of an emergency or disaster. In addition, there are quizzes and competitions designed to improve general knowledge about disasters, although no interaction because this culture is new for the public."*

Regarding the level of quality of the public education element in the UAE, two of the interviewees agree that the UAE is still in the early stages, that efforts need to be made and that there is still a long way to go in order to achieve the desired goals. They believe that public education in the UAE does not compare favorably with that in other developed countries. Interviewee A also expresses his dissatisfaction with the level of public education and awareness in the UAE and thinks there is still a lot to do in order to achieve a satisfactory level: *"In my opinion our progress in terms of educating people about disasters is ongoing and a lot still has to be done. I believe that what we need in our system is at federal level the creation of a general strategy for public education, which unfortunately does not exist at the moment."*

In order to reach the level of developed countries Interviewee B says that the UAE has to learn from their experiences by sending trainees to countries such as the UK and benefitting from research conducted by students such as the researcher himself. He refers to the eight elements the researcher selected from various frameworks in the world to illustrate what he is saying: *"In your case for example, the eight elements you got from other frameworks, without any doubt, will help fill the gaps in our framework and considerably help it to reach the highest standards."*

As a result, it is clear that there is no official standard or strategic concern regarding public education, and all that exists are the ideas implemented by each institution itself. It is noted that methods for public education are limited to schools without including other people. Regardless, the approach to engage only schools might be because of the barriers encountered in trying to engage the general public. Thus, there is need to improve public education as an important component in emergency preparedness, as this element ensures that the public are adequately informed in helping them to prepare for emergency or disaster.

iii. Barriers to Public Awareness During Disasters

The objective of this section is to understand if there are any barriers facing the element of public education. To achieve this objective, the question asked was, ***Are there any barriers acting as an obstacle to the public education element?***

All respondents agree that there are indeed obstacles affecting the improvement of the element of public education in the UAE, and these are related to several factors. For example Interviewee A1 does not think that the lack of progress has been intentional in the UAE, but rather thinks the situation is so because there are obstacles, the most important of which is related to the lack of acceptability of this culture by the public. He adds, however, that many efforts have been made in this regard and new ideas are in the process of being put into practice. Interviewee A relates the obstacles to culture, habits and customs. He gives an example of the different behaviors of ordinary people in the case of an accident: *"In European countries, if a person is injured in an accident, nobody intervenes in order to help except specialists and people who are qualified to do so. In our case, however, an ordinary person may take a seriously injured accident casualty to hospital in his own car, due to the influence of culture, customs and habits. In our culture we help any person who needs help but unfortunately we do not know that in this case, we may be putting the injured person's life in risk. In addition, sometimes you will find that people joining in to help in rescue operations actually make the situation more difficult."*

Interviewee B emphasises the fact that public awareness and education is a very sensitive issue. When the NCEMA officially started informing people about how to behave in the case of an emergency or disaster, people wondered if there was a reason for the campaign and whether a disaster was about to take place. *"The level of public awareness is different from one person to another, based on their education level, and to what extent this person is interested in knowing about emergencies. Therefore, you will find our culture in this regard is not particularly advanced, as we have not been exposed to huge disasters, such as Japan, for example."*

Interviewees F and F1 were in agreement that the culture of emergencies and disaster management is still new for the UAE, and this is not helped by the large variety of nationalities living there. *"As you know, apart from the fact that the culture of emergencies/disaster management is still new for the UAE, it is also a multinational society, which represents a huge challenge in terms of how to educate all these people. Also, we are*

*afraid that if we give a large number of alerts, this could lead to a wave of panic, with people thinking that they are in imminent danger. "*In a similar vein, interviewee E highlighted the barriers caused by the diversity of nationalities in the UAE. *"One of the main difficulties that we face in educating the public is language. There are more than two hundred nationalities in the United Arab Emirates which makes delivery of information to all these communities very difficult. This is compounded by their differing cultural and educational levels. Religious diversity represents another challenge. For example, members of some religious communities consider disaster as a punishment from God."*

Interviewee A4, unlike the others, could see no barriers to public education in terms of language, religion, attitude or even education level, and he related a funny story about something which had happened to him: *"In my view there is no difficulty in educating the public whether in terms of language, culture or educational level as we can use audio-visual means to transmit information in a proper way to targeted individuals. One day I received in my office an Asian gentleman who told me that there would be an increase in wages for civil servants. I did not pay any attention to this information because I simply thought it was not true, so was surprised two days later that the information was accurate and it was announced in official newspapers. What I would like to say is that the world has become a small global village; and information can be spread around it, never mind within a country. Disasters are considered important issues so any information related to disasters/emergencies would certainly reach the public. Therefore, in my opinion, I cannot see any difficulty in disseminating information to people who are resident in the UAE."*

However, interviewees A and A1 provide solutions to these obstacles; Interviewee A said, *"All that we need is to put all these efforts under one umbrella, so that one official body is responsible for public education. At the moment, each body works alone and there are no official policies or regulations to organise this issue.* "Interviewee A1 mentions that, *"the NCEMA should be responsible for creating an overall strategy, to be applied over the next five or ten years. In this way, I think we will make good progress in the element of public education in the UAE."*

It can therefore be concluded that there is clear evidence to indicate that there are barriers facing the implementation of the element of public education in the UAE. Some of the barriers mentioned are lack of public awareness of how to behave in an emergency. This barrier shows that there are no public awareness which include public education pre-event as

examined in chapter three, section 3.4.6. The explanations and best practice of public education examine in chapter three emphasised the use of a public communication timeline to ensure that people have pre-event awareness, public warning when the event is foreseen or happing and information and advice in the post event period. Another barrier is the wide variety of nationalities in the UAE with different languages, cultures, religions and beliefs which make it difficult to deliver public education. While diversity of cultures, religions and languages have been considered as barriers in the UAE to implementing public education for emergency preparedness, countries such as the US, UK and Australia, from where the UAE have adapted EM standards, also have similar population composition. Perhaps the barrier in implementing public education in the UAE is more about lack of documented policies and regulations and lack of creativity in trying different approaches to educate the public about a culture of emergency and disaster management than about cultural issues. Since the US, UK and Australia are all countries with even more cultural diversity than the UAE, it is safe to infer that the barriers experienced in implementing this element of preparedness are similar to those responsible for implementing other elements.

6.2.3 Main Finding

Based on the interviewees' responses regarding all the elements effecting the emergency preparedness stage identified from the literature, it has been revealed that these elements exist in the UAE's emergency management standard as an idea and not under a preparedness framework, which confirms the gap in the research. In addition, is has been discovered that there are barriers facing the implementation of these eight elements in the UAE's emergency management standard, and that all respondents agree that there are a number of barriers inhibiting the development of the UAE's preparedness for disaster, which are summarised as follows::

- Lack of clear policies or written laws and regulations to establish the standard for emergency preparedness activities and determine the duties and responsibilities of all the stakeholders who take part in preparedness.
- All stakeholders whether governmental or non-governmental do not have a good understanding of the standards implemented in the UAE or the training required for this purpose.
- The private sector and non-governmental organisations are not working hand in hand with the government; the efforts are not coordinated with all the stakeholders because

there is a confidence crisis. As a result, they have no idea about EM standards to be implemented and consequently do not know what to do when a disaster takes place, a fact which affects the development of the standard.

- There (B3) are plenty of projects relating to the UAE's emergency management standard in general and emergency preparedness in particular which are still under preparation, which indicates that the preparedness elements concerning this research are not fully implemented.
- Government employees does not have sufficient training because there is no clear strategy in this regard.
- In addition, the public is similarly not aware about emergency management standards or what they have to do in the event of a disaster. On a related note, the public education issue is a challenge because there are people of various nationalities living in the UAE, so languages, religions, cultures, beliefs and attitudes are different and definitely present a challenge as regards education.
- There are a large number of projects by local and federal authorities in the process of being prepared for implementation; the challenge however is how to coordinate all these efforts and establish a single framework.
- The old mentality and resistance to adopt new measures; some employees do not accept the new standards of modern emergency management.
- Insufficient training is provided for the stakeholders.
- Employees delay in finishing tasks such as the risk register on time, or planning and exercises scenario on time. Interviewees revealed that this is due are expected to complete these tasks in addition to their full time job.

With these barriers established, the interviewees agreed there is a need to find solutions in order to implement emergency preparedness within the UAE.

6.2.4 Summary

The main findings from the data collection highlighted previously are several barriers facing the implementation of the eight elements. The interviewees agree that an emergency management standard exists in the United Arab Emirates but not an emergency preparedness framework; this is in accordance with the literature. The results show that the UAE's government adopted the UK emergency management standard with a slight change in order to be applicable for the UAE. The UAE's government made a good effort to apply this standard

in a professional way and for that they signed an agreement with the UK government to be implemented by the Emergency Planning College (EPC) in order to benefit from the experience of the UK in this regard. However, while the results show that the emergency standard in the UAE has a structure like that in developed countries, when the researcher started exploring and investigating the procedures for each unit in this structure, he discovered an important deficiency in the UAE's policies, practice and application of the standard adopted from the UK. In short, the public, private sector and non-governmental organisations are not aware of all the components and application of the emergency management standard in general and the preparedness phase in particular.

All respondents emphasised that in order to improve the emergency management standard in the UAE in general and the preparedness phase in particular, it is necessary to address the main barriers, which are highlighted in section 6.2.3. Therefore, the next section will show triangulation of the results with the experts at local level.

6.3 STAGE II- DATA COLLECTION AT LOCAL LEVEL (LTCEM)

The main findings from federal level show that there are several barriers affecting implementation of the emergency management standard in the UAE in general and emergency preparedness in particular; as mentioned in section 6.2.2. The second stage of data collection will be at local level with the purpose of triangulating these barriers with them. As a result these interviews have two aims: to insure that the interviewees are eligible; and to examine the barriers discovered at federal level. Therefore, these interviews were conducted with the same questions and covering the same elements already covered at federal level.

6.3.1 Profile of Interviewees

The target for these interviews is at local level, specifically the Local Team of Crisis and Emergency Management (LTCEM). The LTCEM is a team which has full responsibility for any disaster which may occur at local level as long as the event does not escalate beyond level 4. For more information please see chapter two section 2.5.2 (B).

The people chosen for this interview work as members of the executive committee in the Local Team of Crisis and Emergency Management. The structure of the LTCEM is presented in figure 6.1. Since the interviewer has a good relationship with the head of the executive

committee, for the purposes of requesting interviews, a letter of invitation sufficed. However, the head of the executive committee informed the interviewer that only four people were eligible to answer the questions, since only they had an appropriate level of knowledge on the subject of EM; the role of the remainder was limited to support during an event. Therefore, the request included an invitation letter informing them of the aims and objectives of the research as well as the questions which would be asked in the meeting (See appendix E).

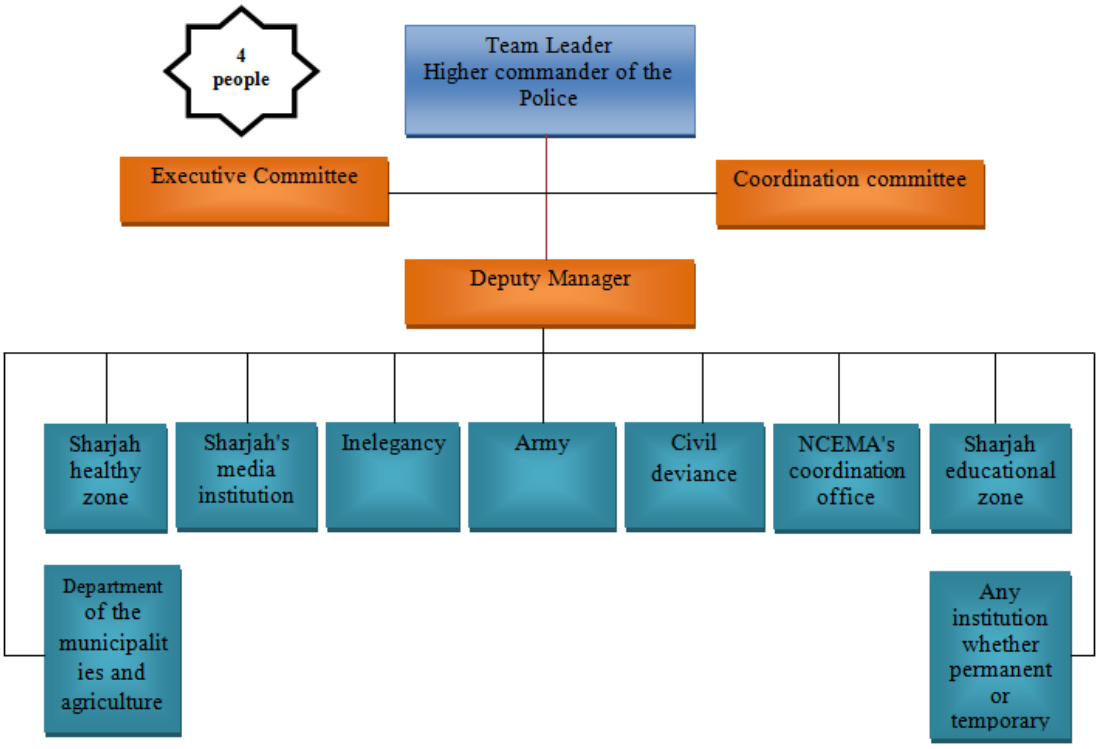


Figure 6.1 Structure of the LTCEM (LTCEM, 2008)

Figure 6.1 shows the structure of the local team of crisis and emergency management. This structure consists of the leader, deputy and two committees: the coordination committee and the executive committee, as well as the stockholders. The target for these interviews was the executive committee - highlighted by a star –and specifically the four people as presented. The profile of the key people in the Executive Committee (EC) is presented in table 6.1.

Table 6.1 Profile for the Key People in the (LTCEM)

CODE	POSITION	BACKGROUND INFORMATION
A	**Director**	He has 25 years experience in the field.
B	**Director**	He has 26 years experience in the field.
C	**Director**	He has 17 years experience in the field.
D	**Director**	He has 20 years experience in the field.

The above profiles show that all interviewees have sufficient expertise in the field of emergency management.

6.3.2 Data Analysis of Local Level Interviews

SECTION I -Eligibility of the Interviewees and Barriers to Confirmation

a) The mission of the executive committee

The objective of this section is to see whether interviewees have sufficient knowledge to provide the information required for this research. To achieve this objective, they were asked the same questions already asked of those at federal level. However, in order to gain an understanding of the committee's mission, and prior to the questions referred to above, the first question asked was, ***what is the mission of the executive committee?***

It was found that all the interviewees are aware of the mission and the duties of the executive committee but each of them has a different explanation of it. For example, interviewee A, the director of the control centre for the distribution of electricity at Emirates of Sharjah, spoke of the different tasks of the executive committee: *"As an executive committee in the Emirates of Sharjah, we are responsible for dealing with an emergency by managing all available resources in order to mitigate the emergency.'*. In regards to coordination between all the stakeholders and identification of hazards he adds: *"The executive committee is responsible for the collaboration and coordination of the efforts of all those involved in dealing with an event, for identifying an emergency and readiness to deal with such an emergency."* Interviewee A also spoke of the responsibilities of the executive committee and specifically how orders are implemented: *"Instructions come from commanders at Gold level, who*

determine the amount of resources that are commensurate with the kinds of risks identified in the risk register. In addition, they make a Matrix for the risks identified based on the likelihood and the size of their impact, and, supervise the preparation of plans and scenarios appropriate to those plans. Exercises will then take place on the basis of these scenarios, and the roles of each agency, as well as the kind of leadership required in this event will be determined."

According to interviewee B, who is a member of the oil board in the Emirate of Sharjah, the mission is divided into three stages: before, during and after the emergency/disaster. According to him the missions before the disaster consist of coordination between all agencies, whether federal, local or even private sector or non-government organisations, and supervision of the preparation of the risk register for all stakeholders in the Emirate. For example, *"We supervised the Sharjah Educational Zone in preparation of the risk register relating to it. Also, as council of oil in the emirate of Sharjah, we have coordinated with the seven private companies working under our supervision and urged them to establish a risk register and prepare appropriate plans, and explained to all stakeholders the roles assigned to each of them during an emergency/disaster".* Interviewee B, however, mentioned that the duty of the EC during and after an emergency or disaster,*"...is the coordination between all the stakeholders participating in the response to the emergency. At the third stage, which will be after the event, we implement the plans relating to business continuity for a quick recovery of the community and return to normal, that is, to the situation before the emergency".* In a similar vein, interviewee C, who is the head of Sharjah's police operations room, observes that, *"The Executive Committee is concerned with the preparation of the risk register for the Emirate of Sharjah, supervising the preparation and implementation of plans and outdoor exercises, and for the provision of resources in times of disaster. This committee is made up of all the governmental agencies in the Emirate of Sharjah."* Furthermore, interviewee D, head of the Operations Coordination Office in NECMA's Sharjah branch, pointed out that, *"The duties of the executive committee are to prepare the local risk register and response plans at local level, determining local capabilities and local resources."* He adds: *"It studies the development potential and local resources as well as the cost of the actions it undertakes at local level."*

Therefore, based on the responses above, it was found that the mission of the executive committee is exactly the same as the mission at federal level, where they are responsible for everything related to emergencies at local level, such as supervision of the risk register,

planning and exercise. Since the missions of the federal and local level are the same, it is confirmed that these interviewees are suitable for this research for triangulation purposes.

b) First Element: Early Warning System

i. Current Practices of the Early Warning System

The objective of this section is to see to what extent the interviewees are aware of the early warning system element, and how they see the implementation of this element compared with what has been discovered at federal level, for example, do they share same view regarding barriers? To achieve this objective the question asked was, ***What do you know about the implementation of the early warning system in the UAE's emergency management standard, as a preparedness method?***

It was found that all the interviewees have general information in regards to the implementation of the early warning system in the UAE. For example, interviewee A observed that first of all it is necessary to distinguish between natural disasters and man-made disasters***:*** *"Regarding natural disasters, our source of information in the UAE is the Meteorological Agency, which is in charge of early warning in all matters relating to natural disasters"*. Furthermore, interviewee A mentions that any individual member of the community can also perform the role of early warning. For example, *"If any member of the community sees a large spot of oil at sea, they may inform the competent authorities"*. He adds that the type of hazard should be identified by the agency responsible for it, in other words, each type of hazard is the responsibility of a specific agency responsible. *"For early warning, each agency is specialised in a type of hazard. If, for example, the risk is related to public health, it falls under the responsibility of the Ministry of Health. However, if the risk is in the form of a security breach, the responsibility of this matter lies with the intelligence agency, and so on"*. According to interviewee B the early warning system is divided into two stages: pre- and during disaster/emergency. As regards warning before an event he said, *"We rely mainly on the information provided by the National Weather Service with regard to natural disasters. In addition to this, we refer to the risk register which can be considered a warning system in itself, given that it provides a list of disasters that we have identified as well as the disasters that occurred in neighboring countries, which themselves serve as an early warning for us."* The second point highlighted by him was that the risk register itself is warning system, as mentioned by interviewee A at federal level. Thirdly, he pointed out that disasters in neighbouring countries serve as a warning, as mentioned by interviewee C at federal level. So it can be seen that those working at federal level and local level are sharing

the same knowledge, which makes them suitable for interview. However, as regards during the event, he highlighted several methods used for early warning: *"We have the minaret project, of which we try to take advantage during a disaster. Also, we rely on the use of modern electronic devices such as text messages, and social media networks such as Twitter and Facebook. Furthermore, we rely heavily on the media to transmit alerts and give the correct information to the public; a journalist is a member of the local crisis team and he plays an important role."* All these points highlighted above are also highlighted by the majority of the federal level interviewees, which indicates that they have a similar level of understanding and knowledge. Further, Interviewee C observes that there are numerous and varied methods of early warning systems used: *"The media is one of the means to alert the public but the mission of warning system is mainly assigned to the NCEMA. We are relying on the NCEMA for this because it has formal agreements with all stakeholders, who provide information in the case of a hazard."* In a similar vein, interviewee D highlighted the advantage of the media as a method of early warning when he said, *"We have to take advantage of smart phones in the transfer of information, of the use of social media networks as well as other existing applications in the transmission of information before and during emergencies. These are in addition to radio and television."*

Therefore, the results above show that these interviewees are more informed about EWS than interviewees at federal level. However, it seems that the reliance on NCEMA for all EWS might be problematic since NCEMA believes NCM is responsible for EWS and they understand clearly how they should do what they have to do because all of them share the same information.

ii. The Barriers Facing the Early Warning System

Interviewees were asked, ***What are the obstacles acting as barriers to the element of early warning system?***

It was found that all interviewees were in agreement that there are indeed barriers but beyond that each has a different view. For example, interviewee A observes that there are difficulties for the official authorities when a disaster takes place: *"One of the most expected difficulties regarding early warning is power failures during disaster or even before it*.", and he added, *"When this occurs, it is difficult to deliver information to the public or even to communicate between ourselves. The solution to this would be activation of a private network which operates during loss of power and communication."* He also mentioned that lack of updating

databases or lists of contact details of people with whom he communicates during an emergency acts as a barrier. Unlike interviewees B, C and D – as can be seen below - interviewee A stated that there are no difficulties in relation to the public regarding early warning systems: *"In my view, there are no difficulties facing us in our communication with the public because there are many modern methods of communication. We can communicate with different nationalities with different languages through different media such as national newspapers and radio stations. These mean that we largely meet such demands."*

However, unlike interviewee A, interviewee B pointed out that the variety of nationalities presents a significant challenge for the implementation of the early warning system: *"Certainly, having different nationalities is considered the biggest obstacle. There are more than 200 nationalities with obviously different cultures and varying educational levels. There is also the religious factor which is related to the beliefs, and the related perception of the disaster as a punishment in some religions."* He adds that although policies are not part of his responsibilities, he feels that they are important: *"In fact it is not my duty, but policies are a very important issue and I am expecting members of the local team to tell you about it. I know that all policy tasks are accomplished by the National Crisis and Emergency Management Authority (NCEMA) and it requires time to be accomplished."*

Interviewee C, however, highlighted the importance of ensuring the creditability of information prior to its being sent to the public. *"One of the most important obstacles that we face is rumors. Before taking any decision or action we need first of all to ascertain whether the information is true or not because those rumors affect the credibility of our relationship with the public."* In addition interviewee C mentions that the absence of policies affects responsibilities: *"There are no written procedures which describe the tasks of early warning, who is responsible for them and who is accountable. Therefore, we are unable to determine who is responsible in case of any failure or the like."*

Interviewee D is in agreement with interviewee C as regards the absence of policies: *"Basically, there are no written policies which describe the activities related to the early warning system and the same applies to the private sector."* In addition, he mentioned that because employees are not sufficiently qualified, they face difficulty in performing this element. *"Yes, there are some difficulties because the delivery of the message to the different communities in the UAE requires great efforts and extensive knowledge by those who are*

operating this system. Unfortunately, in practice, employees are not trained and qualified enough to perform this role."

It can be concluded, therefore, that the above results confirm two main points: firstly that the interviewees have a good knowledge of the element of early warning system, and thus are the appropriate people for interview. Secondly, the results confirm lack of options or creativity in approaches to EWS. In addition, the absence of policies to guide emergency managers and insufficient public education to raise awareness and inform the public of what they should do when a disaster/emergency takes place act as significant barriers.

c) Second Element: Risk Assessment and Management

i. Current Practice of Risk Management

The objective of this section is to understand how interviewees at local level consider the implementation of the risk register; do they have the same opinions as the federal level regarding barriers and knowledge? To achieve this objective the question asked was, ***What is the current situation regarding risk management in the UAE?***

It was found that all the interviewees have a good understanding of how risk management works. In this regard, interviewee B indicates how the risk register is created based on the institutions: *"The preparation of the risk register is made through the distribution of tasks to the agencies within the scope of the states. If we take the Emirate of Sharjah as an example, the Educational Zone requires all schools, whether public or private, to prepare their own risk register. It transfers these to the school district, which filters them and transmits them to the Executive Committee. The records are again filtered by that committee in order to come up with a single register for the whole of the Emirate of Sharjah."* According to interviewee C, one of the missions of the Executive Committee is the preparation of the local risk register at the level of the Emirate of Sharjah and he described the procedures in detail of how the risk register is created. *"In accordance with this, every member of the committee is assigned with the preparation of the risk register for the agency to which they belong. This is done under the supervision and follow-up by a member of the National Commission within the Executive Committee. The Executive Committee then prepares a single risk register based on the various registers it receives from all agencies. In addition to that, the risk register is reviewed and updated each year."* In a similar vein, interviewee D highlighted the procedures which lead them to create the final risk register based on the risk registers created by the stakeholders. *"In order to prepare a risk register the Executive Committee sends a request to*

the stakeholders asking them to set up their own risk registers on the basis of their role in the emergency. Subsequently, the Executive Committee collects all these records in order to establish a single risk register for the whole of the Emirate."

Therefore, there are indicators that the interviewees have a good understanding of how the risk register is created, but not knowledge of risk assessment and management, which is the element of emergency preparedness. However, the next section will look at the barriers for this element.

ii. The Barriers Facing the Risk Register

Interviewees were asked, ***What are the barriers acting as obstacles to the implementation of this element?***

It was found that all the interviewees were in agreement that there are barriers, although each has a different view. For example, interviewee A observes that because there are no qualified people and no official documents or statistics to serve as a basis for the creation of a risk register, it is difficult to create the risk register in professional way. *"One of the difficulties which we face in the preparation of the risk register is how to determine the likelihood and impact in a real and accurate way for each risk."* added that the reason for that, *"Is due first to the lack of people qualified to do the work and second to the fact that there are no statistics to show how often this event occurs.* "According to interviewee B, among the difficulties faced in the preparation of the risk register is the delay in the delivery of files to the Executive Committee which is, in turn, due to the lack of trained and qualified employees to perform this task. In addition, interviewee B observes that those employees are not working full time on this: *"They are busy doing other jobs and are performing that task only in the form of extra hours. You know, in developed countries, there are specialised agencies with qualified and well trained staff to do that type of job."* These results confirm what has been said at federal level, with the majority of the responses speaking of lack of training and documentation as well as the employees not having enough time.

Interviewee C however, highlighted the lack of adequate knowledge and know-how by the staff of the non-government organisations required in order to prepare a risk register in a professional way. Hence, training sessions were being organized for such purposes. In addition, interviewee C, in agreement with interviewee C from federal level, mentioned the old style managers and their resistance to change: *"At the beginning we had difficulties*

making the managers accept new methods. We therefore organized some training sessions for them to help them accept this culture change."

Interviewee D concentrated on the deficiencies of the committee itself, when he said: *"Committee members keep changing which makes it difficult to make any progress. Members do not comply with conditions set by the Executive Committee, and there are frequent absences of some members of sensitive institutions."* These are points which may well be useful as recommendations for future study. In addition, interviewee D highlighted the same points already highlighted by interviewees A, B and C at local level, when he said: *"The members of government departments are lacking in skills, and tend to underestimate risk due to lack of experience and training, especially when it comes to the assessment of the likelihood and impact of risk on the matrix. This is caused by the absence of a register and delays in the delivery of the register on time."*

It can therefore be concluded that the interviewees have a good understanding of the element of risk management because they aware of the barriers to this element. The delay in developing a risk register is lack of skills, knowledge and understanding of risk assessment and risk matrix as pointed out by interviewees A, B and C at local level. However, the factors identified as responsible for the inaction in NCEMA at the federal level have been confirmed at local level. These factors are old style mentality of the managers, employees - whether governmental or non-governmental – with insufficient training and knowledge of risk assessment and management, and lack of full-time employees working on preparation of the risk register, planning, etc. which means that deadlines for delivery are not met

d) Third Element: Exercise

i. Current Practice of Exercise

The objective of this section is to see how this element is implemented from the local level point of view within the UAE's emergency management standard. To achieve this objective the question asked was, ***What are the current practices of the element of exercise as a preparedness method within the UAE's EM standard?***

In this regard interviewee A pointed out that after the risks have been identify in the risk register, the chief executive will give the order to the executive committee to create the scenarios of exercises. *"Regarding the exercises, the team of gold commanders, having identified specific risks, give their instructions to the executive committee to set scenarios.* "Interviewee B is in agreement with interviewee A that the exercises take place once the risk

register is completed, and this is the responsibility of the executive committee: *"The Executive Committee shall prepare and supervise the implementation of these exercises on the basis of the risks that have been listed in the risk register and build on the plans that have been developed by the leading agencies.* "Interviewee C observes that the scenarios should be at the final stage of preparedness on completion of planning for risks: *"For me the preparation of scenarios is the last stage in the readiness (preparedness) process. Scenarios should then be immediately set upon completion of the planning of preparedness for risk".* Unfortunately, this information by Interviewee C is not supported by any preparedness cycle examined in the literature review. For example, in the US model, evaluation and improvement is after the exercise scenario process (FEMA, 2012) section 3.4.2 and in the UK model, maintain, review and consider revision is after the validate exercise process (CCA, 2004:45).

Despite this, interviewee C gives an example of the fact that the scenarios should be matched with the hazard: *"If the threat is an earthquake, the staff must be trained on evacuations and if the risk is oil spill the training should be on how to deal with this kind of risk."* Interviewee D is in agreement with interviewees A, B and C as regards scenarios following completion of the risk register and planning: *"We start thinking about exercises after the completion of the preparation of the risk register and plan".* He added that the scenarios should be both indoor (table exercise) and outdoor. *"They are divided into two categories: exercises in class and outdoor exercises (scenarios) and of course you can take part in one or two exercises in a year".* In addition, interviewee D compares the period for updating the risk register in the UK and the UAE: *"The risk register in the UK is updated every year; in our case, the risk register will also be updated every year and I think it is a good thing as it enables us to train our staff on a regular basis. Above all, it is an opportunity for trainees who participate for the first time to gain experience."*

While the results show that all the interviewees are in agreement that the exercise (scenarios) should be the last step after the risk register and planning are finished, it seems this approach is the UAE style or concept. It is also the general view that exercise is training, whereas exercise, which is an element of emergency preparedness, is carried out to test capacity, resources and ability of responders and emergency organisations to effectively respond to risk or hazard assessment and the emergency procedures documented in the emergency plan. It is the outcomes of the exercise which determines training needs or areas where further training, resource allocation and management and review is required (CCA, 2004; FEMA, 2012; McCreight, 2011 and Dillon et al. 2009). All these are explained in section 3.3.3, 3.4.2 and

3.4.3 in chapter three. Therefore, the next section will attempt to further understand what the interviewees consider to be barriers to the element of exercise in emergency preparedness.

ii. The Barriers Facing the Element of Exercise

The objective of this section is to discover the barriers facing the element of exercise. To achieve this objective the question asked was, ***What are the barriers facing the implementation of the exercises element?***

It was found that all interviewees were in agreement that there are barriers facing this element. Interviewee A highlighted that the knowledge and skills of the commanders add value to the exercise element. *"The knowledge and skills of the commander who is managing the emergency are very important. For example, in an exercise to evacuate a residential building of workers of several nationalities the experience of the leader in the management of the event plays a key role in the success of the exercise, since a variety of multi-national people will have a variety of attitudes and levels of education. This requires a knowledgeable and expert manager.* "In addition, interviewee A states that the official instructions do not yet exist, which are necessary to organise not just this element but all eight elements." *I would say that we need official policies for all our systems. All that I know in this regard is that some of these policies are under preparation but not finished yet."*

Interviewee B is in agreement with interviewee A as regards the absence of policies and training, and believes that training must be provided to all employees, whether governmental or not, whether high level or low, but he adds the relationship between the government and the private sector must improve and that more coordination between federal and local level is necessary. In addition, with regards to employee awareness of the emergency standard he said *"In my opinion, employees are not fully aware of the emergency management standard implementation here because there is no long term strategy concerning training to make them all, and this is due to lack of official policies to organise*." This point exactly is highlighted by interviewee A3, who is the leader of the training units at federal level. Going back to interviewee B, he further highlighted two important points which act as barriers to the element of exercise: "*I see that the partnership with the private sector is not as it should be, and especially during exercises. In my opinion, if we can find a way to improve this relationship, this will doubtless be of value*." In addition, interviewee B pointed out that there are reasons why we have not implemented these elements in general and the exercises in particular. *"As you know, because the structure of NECMA applies at both federal and local level, there are*

several projects regarding the whole standard to be implemented at both levels. The problem is, because there are no official instructions (policies) responsible for organising this, this results overlap between Federal and Local levels and so the job is not being done very well." Interviewee C pointed out that managers are not available to be involved in scenarios because, as previously mentioned, they already have full time jobs. This influences the quality of the exercises. *"One of the difficulties we face in the preparation of the exercises is the unavailability of managers in charge of the organization of such exercises. I am personally in charge of the preparation of the exercises in the Emirate of Sharjah. I am also in charge of the management of operations and this represents a burden for me, which reflects on the quality of the exercises.* "In addition, interviewee C pointed out that the private sector and non-government organizations do not participate in exercises for security reasons.

This view is in agreement with interviewee D, who said. *"The private sector is not involved in exercises and there is a lack of written procedures governing this work in terms of responsibility and allocation of roles. There is also an inability to provide the resources required for the plan because the resources identified in the plan are related to a real event whereas in the case of the exercise, the management does not provide the required resources. This results in poor quality exercise."*

It can therefore be concluded that, according to the responses, employees are not available, confirming the main finding at federal level, which is: *"There are a large number of projects by local and federal authorities in the process of being prepared for implementation (Ref Main finding section 6.2.3)"*. In addition, the majority of stakeholders are not involved in exercises, as mentioned by interviewee C, which confirms the result from federal level, which is: *"Private sector and non-governmental organisations are not working hand in hand with the government; the efforts are not coordinated with all the stakeholders because there is a confidence crisis (Main finding section 6.2.3)."* Thus, the two main aims of conducting this interview are achieved, by confirming that these interviewees are eligible and that the barriers are the same. The confirmation of similar barriers at the federal level also shows that probably the slight change the UAE made to the UK standard makes it problematic; in the emergency preparedness cycle for the UK, all the organisations and procedures written in the emergency plan are tested during exercise (CCA, 2004). Exercise as an element of emergency preparedness is also statutory duty of emergency organisations and council or county councils, rather than private organisations (Cabinet Office, 2009). However, in order to

confirm that the barriers are the same in the UAE at all levels, the interviewees were asked direct questions about them, as shown in the next section.

e) Confirmation of the Barriers

As mentioned above, the previous sections have two aims: to confirm the barriers and to confirm that interviewees were suitable. However this section has just one aim, which is to further confirm those barriers. To achieve this aim the question asked was, ***Do those barriers presented in section 6.2.3 (I show them) act as obstacles to the implementation of these eight elements, or do you think there are more?***

It was found that all the interviewees were in agreement with the federal level finding, i.e., that those barriers do really act as obstacles to the implementation of the eight elements. Interviewee A agreed with those barriers already highlighted at federal level: *"I agree with the barriers you have shown me in this paper, and I see that they cover all the key players and activities involved in emergency management, such as employees, whether governmental or not, not having sufficient training, and I would concentrate more on the employees of non-government organisations because their knowledge in this regard is less than ours."* As regards policies, he added, *"I totally agree that there are no policies and this is an important point, since this lack of official policies to organize any of the elements means that it is not possible for them to be implemented professionally*." In addition, a finding at federal level shows that there is a crisis of confidence crisis between the government and private sectors: *"In my opinion it is true, and we noted that during our exercises and information sharing, we usually do not involve the private sector in exercises, which will not help to improve our system."* Regarding public education, interviewee A agreed that public awareness is not as it should be, so this barrier must be overcome and the public have to be more aware of how to act when a disaster takes place. In addition he confirmed issues of old school management and lack of employee understanding of the emergency which act as barriers to implementing these elements: *"I can see that the old mentality acts as a barrier; the large number of projects being implemented at both levels need more coordination between federal and local levels, and employees need to have a better understanding of the system of emergency management in order for them to be able to deal with it."*

Interviewee B also agreed that these barriers are significant, and added that it is necessary to find solutions in order to improve the emergency management standard in general and emergency preparedness in particular within the UAE. *"Yes, these barriers you found during*

your interviews at federal level do exist and some of them I have already mentioned, such as building good relationship with the private sector, as they have a diversity of resources to help during a disaster. However, a good relationship between government and the private sector must be based on officially organised interactions."

Interviewee C is in agreement with interviewees A and B that these barriers act as obstacles for the implementation of these elements and he mostly repeated what had been said by them. Interviewee D agreed also: "*In fact, these barriers highlighted at federal level cover all the deficiencies we face in the course of our duties. I see that training is mentioned and I certainly agree, because training is not provided for employees as it should be. I agree also that there are deficiencies in regards to policies, and also to old style managers. As regards the latter, I would mention here that this point is not just related to managers but also to some of the older employees who are not interested in the modern style of management."*

It can therefore be concluded that the interviewees at local level are in agreement and confirm the barriers as identified at federal level.

6.3.3 Main Finding

Based on the responses from interviewees at local level, it is can be said that all of them are in agreement that the UAE's Emergency management in general and emergency preparedness in particular faces barriers and in order for these standards to function professionally, it is necessary to overcome these barriers. In addition, the results show that the interviewees from local level are in agreement with the findings from federal level, in other words, the local level has confirmed the barriers highlighted by the federal level which already exist in section 6.2.3.

6.3.4 SUMMARY

As mentioned in the beginning of this section this section has two aims: to ensure that the interviewees are reliable and capable of providing correct information, and secondly to see the point of view of the local level regarding the main findings from federal level.

As for the first aim, the results show that these interviewees have a good understanding of the UAE's emergency management standard, of how this standard is implemented, and where the deficiencies exist. It is clear that the feedback gained from them is of value because it helps to understand better the problematic areas. Thus, these people are eligible for this interview.

As regards the second aim, the result shows that the local level agreed with the barriers to implementation of the elements within the UAE's emergency management standard identified at federal level. Therefore, the next section will rank these barriers based on priority at both federal and local level in order to suggest improvements in the UAE, for emergency management in general and emergency preparedness in particular.

6.4 STAGE III- BARRIERS RANKING WITHIN THE UAE

Having confirmed the barriers at local level, as mention previously in section 6.1, the last methodological stage will be to make ranking for the factors that have been captured from the qualitative data. The aim of this section is to analysis the importance of these factors according to the opinion of fourteen subject experts from both federal and local levels. Therefore, a questionnaire was distributed in order to gain the experts' opinion of the importance of these factors by giving one for the factor of highest importance and ten for the factor of least importance. As a result, based on this priority of these barriers, recommendations can be given to the UAE government of how to improve the current standard. However, the target for this ranking was in the UAE, with fourteen experts from both federal and local level.

6.4.1 Profile of the Federal level Interviewees

The targets within the federal level are the seven subject experts who work in NECMA, since it is the federal authority that coordinates emergency management for the UAE. Figure 6.2 shows the position of the seven experts who are interviewed.

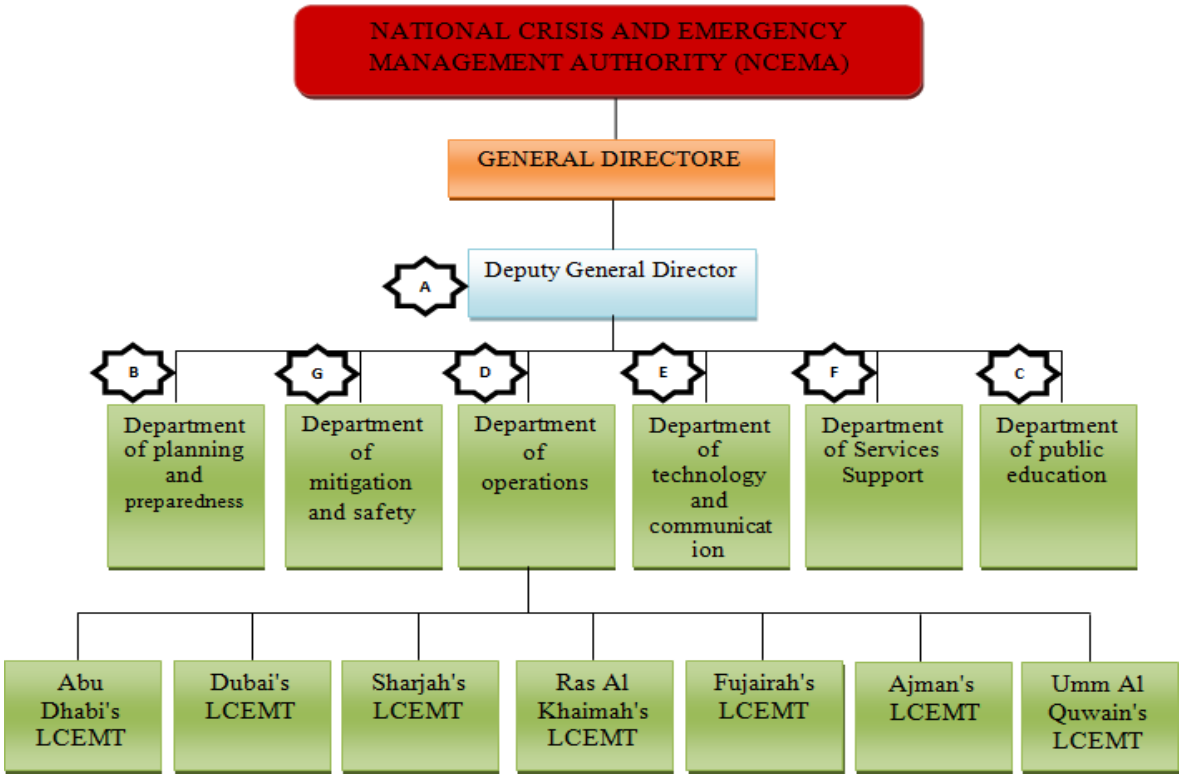


Figure 6.2The position of the federal level interviewees (NECMA, 2007)

This structure shows that the target for this interviewee is aimed at seven top people who are the deputies of the general directors in NECMA as well as the leaders of the departments, highlighted by the stars.

To a reach those people who work in the NECMA the email was sent to the administration office and this office distributed the questions to the interviewees with the response via email. In addition to the questions, the email gave details of the research and the aim of this ranking in order to give the interviewees a clear picture of the aim of this research. To see the questions please go to appendix F. In addition, table 6.2 shows the profile of the federal level interviewees.

Table 6.2 the Profile for the Key People in the (NECMA)

CODES	POSITION	BACKGROUND INFORMATION
A	**Director**	He has more than 31 years experience in the field.
B	**Director**	He has more than 25 years experience in the field.
C	**Director**	He has more than 27 years experience in the field.
D	**Director**	He has more than 28 years experience in the field.
E	**Director**	He has more than 21 years experience in the field.
F	**Director**	He has more than 20 years experience in the field.
G	**Director**	He has more than 28 years experience in the field.

The above profiles show that all interviewees have sufficient expertise in the field of emergency management.

6.4.2 Profile of the local level Interviewees

Similarly, the target of the local level interviewees work in the local crises and emergency management team in each emirate. There is a total of seven people in addition to their leader for the LCEMT, who work as commanders for the police in each emirate, so their ranking is not lower than brigadier-general and their experience not less than thirty years in the security field in general. Figure 6.3 below shows the position for those seven people.

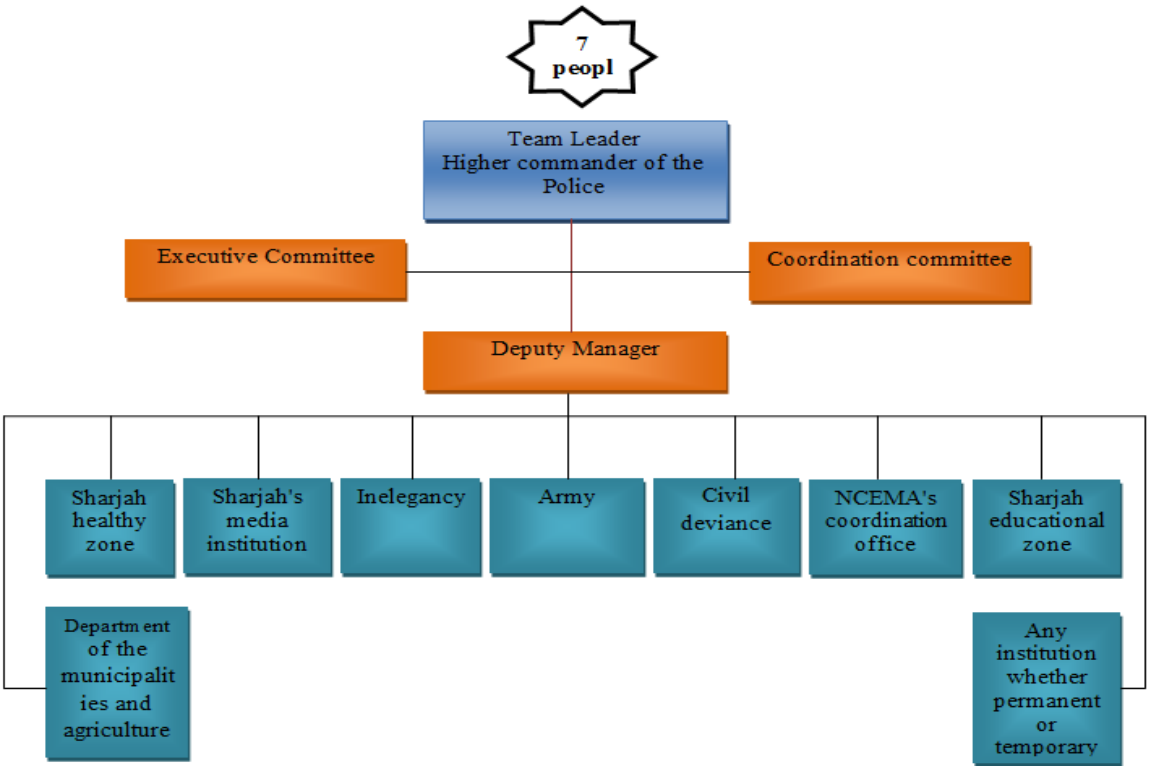


Figure 6.3 Structure of the LTCEM (LTCEM, 2008)

The structure confirms the status of the seven people targeted for this interview as leaders of the local crises and emergency management team, highlighted by the star. It was difficult to reach these people, because they are key people and each of them works in a different emirate. For that reason the form was sent to them in variety of ways. For the supreme commanders of Abu Dhabi, Dubai and Ajman police the form was sent via email and the response was by email. The form was given by hand to the secretary of the supreme commander of Sharjah and Fujairah police, while for the supreme commanders of Umm Al-Qaiwain and Ras Al Khaimah police access was via a friend who works there and the response was sent via email. Table 6.3 shows the profile of the local level interviewees.

Table 6.3 Profile for the Key People in the LTCEM

CODES	POSITION	BACKGROUND INFORMATION
A	**Director**	He has more than 29 years experience in the field.
B	**Director**	He has more than 34 years experience in the field.
C	**Director**	He has more than 33 years experience in the field.
D	**Director**	He has more than 27 years experience in the field.
E	**Director**	He has more than 27 years experience in the field.
F	**Director**	He has experience more than 29 years in the field.
G	**Director**	He has experience more than 26 years in the field.

The above profiles show that all interviewees have sufficient expertise in the field of emergency management.

6.4.3 Data Analysis of the Barriers Ranking

As previously mentioned, there are several barriers hindering the implementation of the UAE's emergency management standard in general and emergency preparedness in particular. The objective of this section is to rank these barriers based on priority, which will enable us to produce a recommendation for the UAE's government. To achieve this objective, all the barriers are summarised in ten main points, then the questionnaire sent to the fourteen interviewees profiled. The questions can be found in appendix F. The result of these questions is presented in table 6.4.

Table 6.4 Result and Rating Given by the Interviewees

FACTORS/BARRIERS	1	2	3	4	5	6	7	8	9	10	SCORE	RESULT
Good understanding of EM standard	13	-	1	-	-	-	-	-	-	-	1.14	1
Government Employee training	-	5	2	1	1	1	4	-	-	-	4.21	2
Speed up initiatives leading to EP	-	1	1	2	-	2	2	6	-	-	6.21	7
Availability of public awareness strategies	-	-	-	-	3	1	1	4	3	2	7.64	8
Coordination between the federal and local government	-	1	1	4	1	3	1	1	2	-	5.5	6
Change of organisation culture and attitudes	-	2	3	2	4	-	-	1	1	1	4.85	5
Stakeholder training	-	-	-	2	-	3	2	-	2	5	7.71	9
Clear public policies and regulation	-	-	-	1	1	-	-	1	6	5	8.64	10
Coordination between government and stakeholders (S/Hs)	1	3	2	1	2	1	1	2	-	1	4.17	4
Speed of submitting tasks	-	2	4	1	2	2	3	-	-	-	4.5	3

Table 6.4 shows that there are ten factors which have been identified as barriers to implementing an emergency management standard and preparedness elements in the UAE. These barriers, represented using codes from B1 to B10, were sent to the fourteen interviewees from both federal and local levels in order for them to rank them based on priority or which barriers they consider most significant. The change in figures between the columns one to ten highlights the differences of opinion between the respondents about the significance of these barriers. Therefore, table 6.5 provides the final result for the barrier ranking.

Table 6.5 The Final Result and the Percentages Given by the Interviewees

CODE	FACTORS/BARRIERS	%	RESULT
B1	Good understanding of EM standard.	1.14	1
B2	Government Employee training.	4.21	2
B3	Speed of submitting tasks	4.5	3
B4	Coordination between government and stakeholders (S/Hs)	4.71	4
B5	Change of organisation culture and attitudes.	4.85	5
B6	Coordination between the federal and local government.	5.5	6
B7	Speed up initiatives leading to EP	6.21	7
B8	Availability of public awareness strategies	7.64	8
B9	Stakeholder training.	7.71	9
B10	Clear public policies and regulation.	8.64	10

Table 6.5 shows the final results for the barriers after being ranked from top down based on their significance and to what extent they act as barriers in the UAE. These barriers were mentioned by the interviewees during the interview session with reference to implementing the preparedness elements and EM standard as a whole.

It can be observed that while some barriers were mentioned repeatedly by the interviewees, some of those barriers were not considered the most severe when ranked. This means that ranking the barriers is vital to ensuring that the appropriate solutions are provided based on priority and how severe professionals in the UAE consider them. Therefore, the rankings indicate the significance of these factors starting from B1 which is (Good understanding of EM standard), the most important factor to be addressed, to B10 which is (Clear public policies and regulation, the least important factor based on the experts' response. For example, as presented in table 6.4 thirteen out of fourteen of the respondents pointed out that the B1 is the most important and the score of this factor was 1.14. It is also stated in international best practice for EM that emergency managers should have an understanding of how EM standards are implemented in order to effectively carry out their work. This is very important because if employees understand the EM standard and its application it will be easy for them to carry out their duties and responsibilities as effectively as possible. However, B10 came in as the least ranked which means that it is the least barrier to implementing effective emergency preparedness.

6.4.4 Discussion of Findings

The findings of this research, in particular identifying the eight essential elements of emergency preparedness and barriers to formulating them, have indicated one of the ways in which emergency preparedness can be improved. They both confirm and challenge previous research in the field of emergency preparedness. For instance, some of the barriers identified in the course of this research can be solved using a Risk Management process illustrated in Figure 3.6 in chapter three. Establishing the context of risk helps to increase the understanding of risk, as well as that of EM standard (B1), this inevitably helps to enhance the application of the standard that govern risk (CCA, 2004; Bullock, 2006).

As emphasized by Ball and Ball-King (2013), the process of identifying hazards and threats, analysing risk, evaluating risk and deciding whether to accept risks or not, or to treat risk, involves good coordination between stakeholders and between federal and local government (B4 and B6). The solution proposed can also ensure that EM tasks can be submitted more quickly, based on the understanding of risk impacts can be severe on the public if EM tasks are not submitted promptly (B3 and B7). According to Gerrard and Petts (1998), this process also helps to identify training needs for stakeholders and employees (B2 and B9). Within this context, it can be said that the research findings confirm previous research in the field of EM and preparedness.

Despite this, the findings also challenge previous research in this field. For instance, B8 and B10 are barriers identified in this research which indicate the potential hindrance to formulation of an effective emergency preparedness system. While it was only the UK and Australia that have the element of public education and awareness strategies embedded in their preparedness system, all preparedness systems failed to emphasize the relevance of clear public policies and regulations in EP. This aspect of the research findings challenge previous and existing research in this field.

Although authors such as Lofstedt and Boholm (2009) argued that risk communication is crucial to increasing the strategies for public awareness, they did not explain the relationship between public awareness and other elements of EP. Furthermore, Regester and Larkin (2008) emphasized that risk communication and consultation can help to clarify policies and regulations which needs to be put in place, which also relates to (B10). None of the preparedness systems evaluated showed how this enhanced preparedness for emergencies. This particular finding also challenged previous research in the field of EP. Lastly, until now,

the problem of “change of organization culture and attitudes” (B5) has not been linked to ineffective, insufficient and limited EP. This finding challenges previous research in the field of EP. Although change of organizational culture and attitudes has been linked to organizational crisis and human resources problems (Roux-Dufort, 2007), they are yet to be identified as a major barrier to developing effective emergency preparedness systems.

Therefore, if the UAE government needs to improve the emergency management standard in general and emergency preparedness in particular it is very important to address and reconsider all these barriers, regardless of their ranking. This next section has helped to identify areas of the research findings which confirm or/and challenge previous research in the field of EP. The section also emphasizes the core purpose and aim of this research, and is the recommended approach for improving emergency preparedness (EP) in the UAE. Thus, the next section focuses on the strategic approach recommended for the UAE government in order to improve their emergency preparedness system.

6.4.5 Recommendations of Implementing EP in the UAE

The main aim of this research is to investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government in order to strategically improve the current level of emergency preparedness in the UAE. However, investigation of the literature as well as the state of the emergency preparedness in the UAE reveals two main points. The first point was from the literature and is that there are key elements affected the emergency preparedness stage. The second point was from the case study, which are the ten barriers hindering the implementation of the eight elements of emergency preparedness presented in table 6.5. Therefore, Table 6.6 provides the solution for the barriers and outlines the recommendations for solving those barriers. These recommendations are considered as the strategic approach for improving emergency preparedness in the UAE. The strategic approach recommended in this research requires that all elements of emergency preparedness need to be applied as an integrated unit based on the integrated principle emphasized as part of the principles of emergency management standards mentioned in section 2.4.2 in chapter two. This infers that barriers to an element are barriers to all elements, since the elements are interrelated and the emergency preparedness phase is considered as a continuous process (*see section 3.3.2 after US preparedness cycle*). Therefore, solutions presented in table 6.7 are based on principles, best practice and lessons learnt in emergency and disaster management. They are also based on theoretical underpinnings for emergency preparedness as documented in several literatures on emergency and disaster management as well as in the literature review chapters of this research.

Table 6.6 The Recommendations of implementation EP

Barriers	Identified Problems	Recommendations
B1 – Good understanding of EM standards	- Lack of S/H understanding of EM standard - Lack of understanding of EWS which also affects preparedness methods and efforts - Insufficient academic researchers to conduct research in order to evaluate the situation due to lack of understanding of principles and concepts of EM standard between employees - Inability to anticipate risk, lack of understanding, risk perception, level of expertise and entire risk management process affecting EM preparedness and implementation - Confusion about EM preparedness training which is the training element with specialised training for career development	- Promote a long term and sustainable strategy to educate all S/H on the fundamental stages of EM standards. - Promote innovative ways of engaging S/H in the understanding of EM standards - Encourage innovative research in order to identify deficiencies in the current standards their effective implementation. - Educate and train S/H in the understanding of the whole life cycle of EM standards - Raise employee awareness of the EP risk levels through dedicated training programmes. - Promote training to enhance effective leadership and management skills. - Offer training to enhance employee IT skills and information management systems.
B2 - Government Employee Training	- Limited specialised and focused training on the principles and concepts of EP to government employees - Lack of qualified government employees who understand the principles of EP - Inactive trends towards promoting employee training - Lack of knowledge to influence plan preparation and to implement EM activities in a professional manner	- To promote specialised training for government employees - Support employees to obtain further specialised training in the field of EM. - Change of culture and attitudes towards engaging employees in training and development - Conduct training needs assessment to determine the level of training and knowledge required by each employee or government department
B3 - Speed of submitting tasks	- Lack of dedicated staff with specific roles	- Increase the Human Resources to cope with the needs for specialised employees with specific

	- Delays caused due to the mobility of employees to attend to different tasks - Delays due to the lack of clarity of employees' roles and responsibly within the government departments - Ineffective communication of tasks between the stakeholders causing delays, due to the lack of understanding of EP requirements.	roles. - Assign specific staff to specific roles. - Offer training to enhance stakeholders' understand of EP requirements and speed up the communication process.
B4 - Coordination between government and S/Hs	- Lack of coordinated information between the government and the S/H due to their level of sensitivity and confidentiality, which in return impact on EP - Lack of transparency of information exchange between the government and the stakeholders - Lack of government engagement with S/H due to security reasons - Lack of trust between the government and the S/H - The increased number of emergency projects add to the challenges facing the government to engage the S/Hs - Government expectations of S/H roles and responsibilities in terms of planning emergencies - Lack of government desire to engage the S/Hs - Lack of government strategy to engage S/H through training	- Recognise the importance of the S/H role in EP. - Seek strategies to build levels of trust with S/H in order to enhance collaboration and transparency - Develop clear policies for S/Hs roles and responsibilities during the EP process. - Develop strategic training programme to engage the S/H with government activities for EP.
B5 - Change of organisational culture and attitudes	- "Old school" mentality and approaches of doing things - Refusal to progress and use new technology which can enhance preparedness - Delay in implementing information system because of old mentality, e.g. GIS - The old administrative process prevents access to information especially by non-governmental organisations - Part of the difficulties in training are linked to rigid and "old school" approach to training - Organize and equip resulting from exercise and training are not prioritized as required for effective preparedness	- Seek innovative ways of engaging experienced and older leaders in the sectors responsible for emergency preparedness - Develop policies which ensures that new technology is used by everyone - Build in monitoring and evaluation process for everyone including "old school" leaders to ensure that everyone is progressing - Have policy which guides data sharing and data protection among stakeholders of emergency preparedness

		- Develop policies to ensure that all feedback from exercise and training is adopted for mobilising equipment and organise preparedness activities
B6 - Coordination between the federal and local government	- Lack of coordination between federal and local levels during disaster management - Lack of clear strategy for public education for emergency preparedness - Absence of policies, training and understanding of coordination, relationship between roles and how this can be improved.	- Adopt and implement all eight elements of EP in a combined way - Have policies which clarify roles and responsibilities of emergency organisations at local and federal levels - Develop strategy for enhancing EP education for EP elements - Put in place policies, conduct training and orientation to teach and state the relationship and coordination between federal and local levels
B7 - Speed up initiatives leading to emergency preparedness	- Several pending projects and none completed yet - Lack of policy hinders the prompt and professional completion of EM projects - Documentation of risk register is ongoing - Many projects will be delayed until National Operations Centre (NOC) is completed and ready for use - There is delay in accomplishing tasks because only NCEMA is responsible for many tasks and projects	- To prioritise the most essential tasks and complete them - Share some of the responsibilities with other emergency organisations such as the civil defence, police & Red Crescent to quicken the completion of projects and tasks. - Use comprehensive principle of EM to achieve EP elements and collaborative tasks
B8 - Availability of public awareness strategies	- Insufficient efforts made by NCEMA to educate people - Efforts are made, but insufficient - There are approaches such as quizzes and competitions and education in schools used to educate people, but this is not effective - Lack of general strategies developed at national level for public education - Lack of progress is due to obstacles created by resistance by the public - Lack of safety culture and ignorance about risks of emergencies	- Work in partnership with other emergency organisations, private sector, media and NGOs to deliver public education - Adopt best practice as guidelines for delivering public education - Use public communication timeline as one of the strategies for implementing public education - Engage the public through creative ways and send information through businesses, organisations, religious and community groups - Use public communication timeline and best

	- Fear of too much public education or information overload which many think can cause panic about imminent danger	practice to teach about preparedness and risks of emergencies - Reassure the public about safety and boost their confidence by using positive examples of how preparedness helped in other parts of the world
B9 - Stakeholders training	- Lack of awareness, knowledge and know-how about risk assessment and risk register among stakeholders - Absence of policies and regulations - Lack of training to teach the culture and process of risk assessment between employees and all stakeholders because not all employees qualify - Lack of policies and regulations governing information exchange creates confusion and lack of information exchange - Lack of awareness and trainings for stakeholders to know how to prepare plan - Lack of stakeholder training affects their ability to develop their skills and knowledge in order to implement element of training - Lack of stakeholder training often results in increase in costs and time because of their inability to carry out risk assessment activities	- Conduct risk assessment training to improve the level of knowledge and awareness for stakeholders and employees - Adopt best practice guidelines used in other countries and write a risk register peculiar to the UAE - Have routine training schedules to teach stakeholders and employees over a period of time - Formulate policies using principles of EM standard and best practice in training and exercise for preparedness training requirements - Have feedback process to monitor and evaluate the effectiveness of training for stakeholders and employees
B10 - Clear public policies and regulations	- Lack of policies, laws or regulations governing EWS and organisation responsible for EWS - Lack of policies for risk assessment, just main policy for NCEMA - Lack of policy for information sharing and information exchange which affects ability to implement tasks in a professional manner - No official instructions for implementing element of information sharing and other seven elements - No official instructions or policies for organising everything in planning	- Formulate policies, law & regulations to guide the implementation and operations of all the eight elements of EM preparedness - write procedures based on adopted best practice and EM standard to guide all activities relating to the implementation of EM standard and eight element of preparedness - conduct regular training and briefings to clarify formulated policies and regulations and to define the roles of different organisations in using the policies and regulations to implement EM practice

	- Lack of policies for organizing and implementing training - No documented laws or regulations just administrative instructions - Problematic resource requirements making agencies rely on each other - Absence of policies and regulations caused by lack of official body responsible for organising equipment	and all eight elements of preparedness

Table 6.7 shows in the first column the ten barriers identified by interviewees at federal level and confirmed at local level, whereas the second column highlighted the specific problems causing these barriers, as raised by the interviewees. The third column provides recommendations for the UAE's government in order to overcome these barriers and improve the emergency preparedness stage. Therefore, the next section will be to discuss the problems causing these barriers and provide recommendations.

B1 – Good understanding of EM standards

The data analysis in chapter (5) showed that there is a lack of understanding of EM standards and preparedness elements such as risk assessment and EWS, which then affect other preparedness elements. This was evident as all the interviewees kept confusing the approach to preparedness with development activities. Most of the interviewees also believed that lack of policies was responsible for lack of understanding and implementation of EM standards and preparedness elements. While some of this might be true, none of the principles of EM and preparedness elements examined in the literature reviews showed that policies needed to be formed to implement EM standards and preparedness elements. Both EM standards and preparedness elements are fundamental principles, duties and procedures required of any emergency manager or organisation in the world. This shows that understanding of EM standards and the combined implementation of preparedness elements are key to effective EP and response to any emergency or disaster. A good understanding of EM standards and preparedness elements will also lead to better engagement with stakeholders, and in ensuring that there is better preparedness for reducing and mitigating the impacts of hazardous events. Therefore, there needs to be better understanding of EM standards and preparedness elements in order to prevent any devastating event in the UAE.

Based on the impact and the possible negative outcomes these barriers can cause for the emergency sector and the public in the UAE, the recommendations will promote short-term and long-term impact in the emergency sector. For example, having a sustainable strategy to educate all stakeholders on fundamental principles, phases and

concepts of EM standards will help to ensure continuity of operations rather than people waiting around for policies to be formed. It will also promote innovative ways of engaging stakeholders and for implementing duties related to EM practice and the preparedness process, as seen in the US, UK and Australia. Also, by educating all stakeholders, especially emergency organisations in the UAE, about the relationship and the benefits of the whole EM cycle, there will be minimal confusion about the roles of each stakeholder. Better education and understanding of EM standards and preparedness elements will enhance leadership and a more proactive way of approaching EM issues in the UAE. Therefore, if the UAE adopts these recommendations as a result, it will enhance EM operations and improve the implementation of more effective preparedness procedures which will further make response to events in the UAE more effective.

B2 – Government Employee Training

Training in EM is important in order to ensure that people know what is required of them when an emergency or disruptive event occurs. This means that everyone needs training to become familiar with EM procedures, protective actions, to define roles and responsibilities and determine resources. All these were identified in the literature review chapters as essential element of preparedness. So it is no surprise that the interviewees identified and ranked this barrier as the second most severe for their organisation. As mentioned by most of the interviewees, this barrier hinders implementation of tasks, delays basic duties, prevents innovative strategies to be applied, and causes confusion and friction among emergency managers and stakeholders. The frustration expressed by the interviewees about this barrier was evident during the session and from their explanation of the current practice of preparedness elements and procedures in their organisation and in the UAE as a whole. Therefore, the recommendation for this barrier is very important in solving its wide spreading impact. In order to have a stronger and more effective approach to preparedness and increase understanding of EM standards, specialised training for these two topics is needed for all government employees involved in emergency, crisis and disaster management. This is because general training is conducted in the UAE for employees who are not specific to EM standards and preparedness. Since this training

has not been able to educate people, it is important these recommendations are adopted in order to have a stronger and better preparedness system and more effective EM practice. By supporting employees to attend further specialised training in the field of EM, the roles and responsibilities of all stakeholders in the event of a disruptive event will be more defined. This will also help to change the culture and attitudes of employees towards their duties, thereby ensuring that the strategic approach to preparedness, which is the main finding of this research, is achievable. Therefore, this recommendation will be key if the UAE adopts it for making the implementation of EM standard more effective and preparedness stronger.

B3 – Speed of submitting tasks

The interviewees emphasised that there are delays in implementing tasks due to lack of policies, limited employees and multiple commitments of employees which prevents them from being actively involved in EM activities. This also impacts the speed with which tasks are carried out and implemented. This barrier seems to be commonly mentioned by the interviewees, which indicated that many projects such as risk register and policies are pending and as yet unfinished. This barrier is evidently affecting the progress of the EM standard in the UAE, and more importantly the implementation of the eight elements of preparedness. The delay in completing and submitting tasks is causing a major deficiency in the operations, implementation and performance of tasks related to EM and preparedness elements. Therefore the recommendations for ensuring that this barrier does not continue to limit EM operations, procedures and activities, are important in the UAE.

The impact of this barrier has shown that there is need for solutions since the EM sector is key to public safety and protection of development activities in the UAE. This means that the recommendation to increase human resources is important in order to increase the coping capacities of each department and organisation responsible for EM activities and preparedness procedures. It is also recommended that specific roles should be assigned to specific roles; this recommendation is also related to specialise training, since people need specialised training to carry out specific roles. By so doing, such training will help to emphasise the importance of increasing the speed of completing and submitting EM tasks because of the negative impact of not doing so.

Therefore, the UAE needs to adopt this recommendation because this will increase the speed, commitment and outcomes of EM duties and preparedness activities, thereby enhancing their effectiveness.

B4 – Coordination between government and Stakeholders

The importance of "all stakeholders" engagement and coordination has been explained through the comprehensive, collaborative, coordinated and integrated principles of EM reviewed in chapter two. The lack of coordination between government and stakeholders as a barrier means that EM and preparedness activities will not be synchronized, communication will be problematic, decision making will be chaotic and ineffective and engagement between the government and stakeholders will be limited. All these problems were discussed by the interviewees as having significant impacts on the implementation of preparedness elements and EM. While these problems are emphasized, they are however preventable through the appropriate application of EM principles as discussed in chapter two. This further emphasized the lack of understanding of the EM standard, which is the first barrier, and also shows that all these barriers are linked to the lack of understanding of EM and the preparedness phase. This means that recommendations are key to solving the problems these barriers cause.

As a starting point to adopting and implementing the recommendations for managing this barrier, it is important for the importance and roles of stakeholders in EP to be acknowledged. The first recommendation and other recommendations for solving problem is key to improving the level of engagement and coordination between government and all stakeholders. While it is possible that involving many stakeholders can also cause more problems, it is also recommended that policies are developed to clearly state the roles and responsibilities of stakeholders during the EP process and during implementation of EP elements. The effectiveness of the coordination between government and stakeholders can be improved significantly through strategic training programmes tailored to address this issue. Therefore by adopting these recommendations, in-depth understanding of the fundamental elements of EM will be promoted.

B5 – Change of Organisational Culture and Attitudes

The "old mentality" of managers and many long-serving staff seems to be a major barrier. Although their experience is important for adopting lessons learnt from past incidents, they are also causing limitations for effectively implementing EP elements. According to statements of the research participants, the "old mentality" prevents the managers and more experienced staff from accepting new ideas or different ways of implementing EM and EP activities. They are more comfortable with doing things the old way, which is not the current practice internationally due to new risks and challenges experienced during recent disasters across the world. The deficiency caused by this barrier seems to be affecting ability to engage with stakeholders such as non-governmental organizations which are always denied access to information which can enhance EP elements. Therefore the recommendation for this barrier is crucial to solving the problems cause by the barrier.

The contributions of experienced staff are valuable to supporting new and young staff who need experience to understand the mode of operations. However, it is important that the barrier of bad culture and managers' attitudes is managed in a diplomatic way which will encourage cooperation between everyone. Therefore innovative ways of engaging experienced and old managers in every sector is important to implementation of EP elements. It is also important to develop policies which ensure that new technology and ways of doing things according to international best practice and standards are made mandatory for everyone to use. The usage and application of such policies by everyone, especially older managers and experienced staff, should be monitored and evaluated to ensure that progress is being made. This will help to achieve more positive results and solve the problems created by this barrier. Therefore, if this recommendation is adopted, it will make EP stronger and more effective.

B6 – Coordination between the federal and local government

The lack of coordination is not only between government and stakeholders as seen in barrier 4; it also exists between different levels of government. The deficiency this barrier is causing in the EM sector in the UAE makes communication almost impossible, and hinders broad relationships and trust between all levels of government as discussed in the principles of EM in chapter two. The overlap of duties between federal and local level is not well coordinated when dealing with disaster and, despite the training and exercise carried out to clarify roles, coordination is still problematic, which in turn affects implementation of EP elements. This barrier and all the discussed in this chapter further emphasized the importance of good understanding of EM practice and the need for better understanding of the joint implementation of all eight elements of EP. It means just conducting exercise and training without linking it to other elements of EP is not effective, which also emphasizes the need and importance of the strategic approach developed and recommended in this research.

It is important to adopt the recommendations for solving this issue because beyond having policies which clarify roles and responsibilities of federal and local levels, a better understanding of using all the eight elements of preparedness as a process is important to solving the problem of coordination between government at different levels and between stakeholders, as earlier discussed in barrier (4). It is also important to develop innovative ways for educating staff at federal and local levels about the EP elements and its combined implementation for improving EP. While it is recommended that policies should be put in place to ensure that people implement the eight elements, it is also important for them to be educated on how to implement it as a strategic approach. Lastly it is recommended that staff at both federal level and local level are taught the importance of ensuring effective coordination between all levels. Therefore, this recommendation should be adopted as a solution for solving and managing this barrier and for promoting in-depth understanding of the fundamental importance of EP elements and EM principles.

B7 – Speed up initiatives leading to Emergency Preparedness

Although it is understandable that staff are limited in the emergency organisations in the UAE, nevertheless, projects which are pending need to be completed as quickly as possible. One of the interviewees mentioned that many EM activities will not be implemented or happen until the National Operation Centre (NOC) is ready. This indicates that the delay of so many projects will continue to hinder the implementation of other EM and EP activities. It is therefore necessary for the government to find ways of speeding up the different initiatives leading to EP, especially because this is key to public safety.

To manage the barrier which hinders EM preparedness initiatives, it is important to prioritise the most essential tasks and complete them. Since there are limited employees who can quickly carry out these tasks, the government can contract them out to other emergency services, organisations and/or agencies such as the civil defence, Red Crescent, etc. to help to complete all EP initiatives and tasks. However, while many of these tasks are still pending and awaiting completion, the comprehensive principle of EM can be adopted to achieve EP element tasks in a collaborative way. Therefore, it is important for the government to adopt this recommendation as well as find other innovative ways of increasing the speed of achieving EP tasks and elements.

B8 – Availability of public awareness strategies

An insufficient public awareness strategy is another barrier in the emergency sector in the UAE. As mentioned by some of the research participants, there are awareness strategies, but they are insufficient to generate any effective outcome. However, others emphasised the lack of general strategies, culture and ignorance about risk of emergencies which then prevent employees from developing strategies for creating awareness. The explanations by the interviewees indicate that this barrier is caused by different factors, some of which have been discussed earlier when recommending solutions for other barriers. Although two interviewees stated that lack of public awareness strategies is because of avoidance of creating panic by providing too much

public education, this barrier still needs to be solved because lack of public education can cause further harm and deficiency to public safety.

It is recommended that emergency organisations and all stakeholders should work together in partnership to deliver public education. This will lead to the creation and use of different strategies for public awareness. It is also recommended that best practice for public awareness and education is adopted as guidelines for delivering public education. As examined in chapter three, figure 3.8, the public communication timeline should be adopted to teach about preparedness and risks of emergencies. This particular recommendation is important for reassuring the public about safety, and to boost their confidence to act positively during any emergency. Therefore this recommendation is fundamental to providing in-depth understanding of EP elements and solving problems associated with lack of public awareness strategies.

B9 – Stakeholder training

Stakeholder training is as important as employee training. It is important that all stakeholders have the same understanding and education about EM standards and practice and about EP elements. This will ensure that confusion is avoided and roles and responsibilities are well defined and carried out. It is evident that the lack of training affects the ability of stakeholders to understand the risks of emergencies, risk assessment and being able to document them in a risk register. Furthermore, these barriers hinder understanding and implementation of other EP elements such as training, information sharing, etc. Therefore it is important that this barrier is managed and solved so that the elements of EP can be effectively implemented, since the barrier is causing deficiency.

Consequently, it is recommended that risk assessment training is conducted for stakeholders to increase their knowledge and awareness so that this barrier can be solved. It is also recommended that best practices from other countries are adopted as guidelines for writing a risk register which is peculiar and applicable within the UAE context. Therefore having routine training about EP elements to teach stakeholders and employees over a specified period of time is important. It is also recommended that policies, feedback process and principles of EM are adopted as guidelines to

ensure that this teaching and training is effective and translates into good and effective results.

B10 – Clear Public policies and regulations

Lack of policies and regulations had been mentioned as responsible for almost all the barriers. While recommendations which are not policy related have been made for solving many of the barriers mentioned in this research, it is also important to have documented policies which can be used as guidance for the implementation of the procedures for EM standards and EP elements. This is because lack of policies, regulations and laws are the main factors responsible for unsuccessful implementation of EM standards and EP elements. It means that the general view among emergency responders is that policies, laws are regulations are all important for ensuring that employees and stakeholders at all levels carry out their duties and tasks. Based on this mindset and orientation, it is important to have policies, laws or regulations in place that mandate the implementation of EM procedures according to best practice and that EP elements should be implemented effectively. Even though this barrier is ranked last, it might be important to consider it as equally important because of the deficiency it is causing in the emergency sector and potential problems it can cause in the future for public safety.

The recommendation for solving the problem of lack of policies and regulation is to formulate policies, law and regulations which can guide the implementation of EM procedures and all eight elements of EP. By so doing, all barriers also mentioned and identified in this research will be solved. This is because lack of policies and regulations are emphasised continuously as being responsible for the failures and lack of effective EM activities as well as EP elements. It is therefore important that regular training and briefings are conducted to clarify roles and the importance of policies and regulations which have been formulated. This is because employees and stakeholders might not be aware they have been formed if they are not informed and educated about them, which in turn is due to lack of communication between different levels of government and between government and stakeholders - all part of the problems caused by some of the barriers identified in this research. Therefore the government

needs to adopt the recommendation provided in this section as solutions to these barriers if the EM practice and implementation of EP elements is to be effective, efficient and promote public safety.

This section has highlighted the barriers identified in this research by the interviewees and the impact the barriers have been having on employees, stakeholders, organisations and the public. Therefore it is important to adopt these recommendations as a matter of urgency in the UAE in order to ensure public safety, implementation of best practice and positive outcomes of implementing strategic EP and its elements.

6.5 Summary and Conclusion

This chapter conducted qualitative data analysis via three stages. Stage one aimed to investigate the current practice within the UAE's emergency management standard based on these eight elements. The target for this stage was the federal level with eleven experts working in the NCEMA. The results showed that there is an emergency management standard implemented in the UAE and that the UAE government is making a good effort to improve this standard, having signed an official agreement with UK government. However, the interviewees highlighted that there are barriers facing the implementation of these elements and these barriers were summarised in ten points (factors). Stage two triangulated the results discover from federal level with experts working at local level, in order to ensure that they are in agreement with the results from the federal level. Four experts were interviewed, revealing that all of them agreed with these barriers. Stage three aimed to rank these barriers based on priority with fourteen experts from both level federal and local. The results were in line with literature and showed that factor A is the most important and factor H the least important, meaning that these factors have to be overcome in order to improve the emergency management standard in general and emergency preparedness in particular in the United Arab Emirates.

CHAPTERSEVEN
DISCUSSION AND CONCLUSION

7.1 INTRODUCTION

This chapter summaries all aspects of this research based on the objectives presented at the beginning of the research. The chapter is divided into three main sections: the first section is a discussion about the research objectives which explains to what extent each objective has been achieved and how they have been achieved, as well as the findings relating to each objective. The next section then provides a conclusion of the entire research based on the discussion in section 7.2, by stating the main issues raised in the research which have informed the need for recommendations for further research and for practice. The recommendations provided in the research are all based on the gaps, results and information inferred from the comments of research interviewees. Therefore, it is envisaged that as a result of this, the area and phases of emergency preparedness can be duly and appropriately improved.

7.2 DISCUSSION

Emergency management is a wide ranging topic. The term often overlaps with that of 'disaster management', but most researchers adopt 'emergency management' as the appropriate term, as highlighted in chapter 2 section 2.2. Emergency management has a cycle consisting of four phases: mitigation/prevention, preparedness, response and recovery. This research concentrates on just one phase, which is preparedness, as presented in chapter 3. The research aims to investigate the state of emergency preparedness in the UAE and to draw up a list of recommendations for the UAE government in order to strategically improve the current situation of emergency preparedness in the UAE. This aim was achieved via five objectives, while the result of the study and the main findings are summarised below:

7.2.1. Objective I – To Provide a Historical Overview of Emergency Management Up to Present Day Practice, Including a Review of Emergency Management Frameworks Established by National Governments.

This objective aims to present an overview of the emergency management background which covers the efforts made by national governments. Information about this is presented in chapter one and the beginning of chapter two, with the aim to improve understanding of international national efforts and contributions to emergency management. To achieve this objective, a review of literature was conducted in terms of the historical background of the emergency management standard. This review mostly covered four main points, of which the first was to evaluate some definitions, principles and the four-phase approach to emergency management. The second point was to highlight the efforts made by the different countries in developing their emergency management standards. The third point was to highlight some examples of man-made and natural hazards which can cause significant damage in countries such as the US, UK and Australia. The fourth point was the situation in the United Arab Emirates and some of the disasters which have affected the country.

The chapter revealed that development has been made in terms of the emergency management discipline over recent decades. However, in spite of this, the impact of disasters worldwide is still severe and continues to cause serious problems for mankind. As one of the countries examined in this research, the UAE has also experienced disaster in the past and is likely to experience more disasters in the future – hence the importance of better preparedness. However, the chapter revealed that there is no well-defined strategic plan on to how to deal with these disasters or at least to prepare for them, in terms of emergency management standards as practiced in the US, UK and Australia. Therefore, this chapter helped to emphasize that the UAE's emergency management standard requires more research. Investigation of the current situation is crucial to identifying deficiencies or factors responsible for the lack of preparedness framework, system or standard, in order to seek measures of improvement in the UAE as examined in other developed countries.

7.2.2 Objective II - To Examine the Emergency Management Standards and Preparedness Frameworks Applied in the US, UK, Australia and the UAE.

To help develop recommendations for the United Arab Emirates' emergency management standard in general and emergency preparedness in particular, it was necessary to explore the current practice of emergency management standards and preparedness frameworks, models or systems used in the developed countries, and then to examine the UAE's emergency management standard. To achieve this objective, an extended review of literature was carried out in terms of the emergency management definitions, principles and approaches of emergency management standard, emergency preparedness frameworks and models. Once this was done, emergency management standards and preparedness frameworks used in the US, UK, Australia and UAE were examined

The main finding from the evaluation of EM definitions, as presented in chapter three section 2.2., is that there are different definitions based on the ability to coordinate activities using a four-phase approach. These four phases are mitigation (or prevention), preparedness, response and recovery. At the end of this section, the definition of EM for the purpose of this research was adopted in order to provide context.

In terms of the emergency management standard implemented in developed countries, standards used in the US, UK and Australia were examined. Examining the EM standards used in these three counties provided context for examining the current EM standard in the UAE. The main findings revealed that structured emergency management standards are implemented in the US, UK and Australia and, while each country has its own particular ways of applying the standards, they are used based on the categories of hazards they face, and the common applications of standard used in all countries are influenced by the four-phase approach.

The findings in this chapter also show that despite the presence of a structured EM system in US, systemic failures still regularly occur. However it is commendable that several efforts have been made over the years to directly improve the EM standard through different

response frameworks and systems such as NRF and preparedness models, guidelines or frameworks such as NPS. Also, US authorities have come to understand that national preparedness guidelines are equally essential in reducing the impact of disasters or emergencies, which led to prioritizing elements of preparedness, such as planning, training, exercise, information sharing, public education, early warning system, organize and equip.

All these elements are organized using the integrated, collaborative, comprehensive and coordinated principles of EM which were adopted by the US, UK and Australia as an essential part of their EM and preparedness framework. However, none of these elements and principles were identified in the EM standard used by the UAE. The presence of principles of EM as well as elements of preparedness in the US, UK and Australia helped to expose the gaps in the EM system used in the UAE. These gaps also helped to provide a basis for undertaking and achieving the next objective in order to further investigate the UAE EM standard.

7.2.3 Objective III - To Identify and Evaluate the Existing Emergency Preparedness Elements in the US, UK, Australia and UAE.

The third objective was addressed in chapter three and chapter six. Chapter three helped to identify the essential elements of emergency preparedness in the US, UK and Australia. The US model showed the relationship between all five elements in the preparedness cycle. However, another preparedness model in the US was examined: Pelfrey's model was designed for a specific hazard, ie, terrorist attack, and is an example of the fact that many countries have modelled their preparedness cycle or framework based on hazard or risk most prominent in the country. However, this was not the case in the UK, where one preparedness cycle is used, and coordinated using two main processes:

1. Embed
2. Consult

These two main processes govern the eight steps of the preparedness cycle in the UK. Although the UAE have adopted the emergency management standard used in the UK, this preparedness cycle is not available in the UAE emergency standard or as part of the

preparedness process. While the US and UK use preparedness cycles, Australia has a preparedness model instead, which has been grouped into sets of activities that guide their preparedness efforts. Regardless, most of the elements identified in the UK and US models were also present in the Australian preparedness model. All the eight elements were evaluated to better understand their scope and contribution to enhancing emergency preparedness.

In addition, the US, UK and Australian preparedness frameworks, models or cycles are coordinated based on vital principles of EM such as integration and comprehensiveness. These principles provide guidelines for coordinating and implementing preparedness elements, and ensure that the following factors are considered when preparedness is undertaken:

- "All phases" of EM which are mitigation, preparedness, response and recovery.
- "All impacts" or possible impacts an emergency can cause to the public and environment
- "All Hazards"; a preparedness arrangement which can allow effective response to be mobilized for managing any category of hazards
- "All stakeholders" which ensures involvement of all emergency organisations, community, government at all levels and any other organization which needs to be included in responding to an emergency.

These specific guidelines were repeatedly mentioned in different ways in the EM standards, preparedness framework and cycle used in the US, UK and Australia. However, there was no reference to the principles of integration and comprehensiveness nor of all these factors in the UAE EM arrangement.

Therefore with the obvious gap in the UAE system, a pilot study was conducted with the eight international experts profiled in chapter five stage one (a) in the UK to confirm the scope of the eight elements which were identified as essential prior to conducting a semi-structured interview in the UAE. Staff of NCEMA were interviewed in order to identify if any of the identified eight elements are currently used in the UAE, and to identify barriers to their

application if they are not used. This is because no preparedness framework or cycle was written in the national response plan. So the interview was targeted at experienced staff who can provide information about the practice of emergency management in the UAE as well as guidelines for practice of preparedness for emergency in the UAE.

7.2.4 Objective IV - To explore and identify the Barriers Associated with Emergency Preparedness in the UAE.

This objective was addressed in the data analysis and discussion chapter. The interviewees that participated in this research provided information not documented in any literature examined in the literature review. While many seem to have ideas about the elements of preparedness, such as early warning system, training and exercise, risk assessment, information sharing, planning, organise and equip, they appear confused about preparedness activities with response requirements. For example, interviewee D claimed that the National Centre for Meteorology (NCM) is responsible for EWS.

However, the literature review explained that early warning within preparedness elements also involves activation procedures between emergency organisations (Canton, 2007). According to Canton (2007) and CCA (2004), the preparedness elements and system are mutually agreed by all stakeholders which have been identified as essential for working together to manage any foreseen hazards. The early warning system explained in chapter three was discussed in terms of public awareness and the responsibility of the emergency sector to inform the public ahead of any incident about how they intend to deal with the emergency when it happens. This is obviously not a weather warning, which is what the NCM does. The basis for EWS in this context is linked with public education and preparing the public once risk has been identified or when a community is recovering from the impact of an emergency.

Furthermore, many of the interviewees identified lack of policies as barriers for implementing some of the emergency preparedness elements. They also identified the following barriers as responsible for implementing any preparedness elements:

- Lack of clear policies and regulations to establish the standard for emergency preparedness activities and determine the duties and responsibilities of all stakeholders taking part in preparedness.

- The stakeholders do not have a good understanding of the standards implemented in the UAE, nor the training required for the purpose of emergency preparedness and emergency management as a whole.
- There is confusion resulting from lack of cooperation between the emergency organsations, non-governmental organisations and the public. This is because all stakeholders are not all involved in the emergency preparedness phase and so are unaware of the plans and what they need to do when disaster occurs.
- The public is similarly not aware of emergency management standards or what they have to do in the event of a disaster. On a related note, public education is a challenge because there are people of various nationalities living in the UAE. This means that languages, religions, cultures, beliefs and attitudes are different and definitely present a challenge as regards to providing education on emergency preparedness in particular.
- There are a large number of projects by local and federal authorities in the process of being prepared for implementation. The challenge, however, is how to coordinate all these efforts and establish a single framework.
- The old mentality and resistance to adopting new measures. It was mentioned by many interviewees that some employees are unwilling to implement standards of modern emergency management.
- Insufficient training is provided for stakeholders such as emergency managers, community and non-governmental organization and indeed all stakeholders considered relevant to emergency management in the UAE.

Many other barriers were mentioned by the interviewees, but the above-listed were the most common as factors responsible for not implementing emergency preparedness elements. Therefore, recommendations which can improve emergency preparedness strategy in the UAE are drawn from these barriers. Recommendations are also derived from existing literature and established practices and guidelines in emergency management and emergency preparedness

in particular. Providing these recommendations also connects to achieving the fifth objective of this research, which is discussed in the next section.

7.2.5 Objective V - To Draw Recommendations for Effective Emergency Preparedness Strategy for the UAE.

This objective is achieved in chapter seven which is the conclusion and recommendation chapter. The recommendations which apply to emergency preparedness based on best practice are suggested as means for an effective emergency preparedness strategy in the UAE. The barriers mentioned by the interviewees and the gaps identified in the literature review as factors responsible for lack of emergency preparedness framework or cycle and for implementing the elements are put into consideration for the recommendations provided. Therefore, the combination of gaps in literature review and barriers identified during fieldwork has informed the sets of recommendations provided in this chapter.

7.3 MAIN FINDINGS

This section presents the main findings of the research drawing from the discussion about the research objectives in the previous section. It is divided into two parts: general findings and detailed findings, according to key elements of preparedness strategy.

7.3.1 General Findings

The general findings of this research show that the emergency management standard consists of four main phases which are; mitigation/prevention, preparedness, response and recovery. These phases are considered as best practice internationally. Other general findings from this research are:

- Emergency managers and authorities ensure that the emergency management standard functions based on good understanding of “all hazards”, “all stakeholders”, “all impacts” and “all phases” of emergencies.

- There is an emergency management standard implemented in the UAE, but it is incomplete. Emergency management in the UAE is not progressing at a pace similar to its economic status.
- The UAE adopted the UK emergency management standard, but implemented a slight variation of the standard. In addition, the UAE have partnerships with the US and Australian governments in order to improve emergency management practice.
- There are different frameworks or standards used for emergency preparedness in the UK, US and Australia, as identified and examined in this research, but none in UAE.

While these findings are general findings relating to emergency management standards, the findings from the interviewees in the UAE reveal that there are barriers which hinder the implementation of the eight elements of emergency preparedness. These barriers further emphasize the importance of a strategic approach to developing emergency preparedness as well as for maintaining the preparedness system. The next section specifies the findings relating to key elements of the preparedness strategy.

7.3.2 Findings relating to Key elements of the Preparedness strategy

The findings that emerge from this research according to key elements of preparedness show that there is no emergency preparedness framework in the UAE. They also show that there is a major need for orientation and education about the importance, and relationship between the elements of preparedness and effective emergency management. Other findings relating to key elements of preparedness strategy include;

- There are eight essential elements of emergency preparedness. These are risk assessment, warning system, information system, planning, training, exercise, organize and equip, and public education. These elements have been identified from literature, emergency management acts and guidelines, and confirmed by experts in the field.
- The eight emergency preparedness elements identified and evaluated in this research are vital to ensuring effective and strategic emergency preparedness capable of ensuring effective response.

- The findings from the primary data show lack of understanding of emergency preparedness elements and confusion of how the elements should be applied in the UAE, despite adopting the UK emergency management standard.

Therefore, the general and specific findings have shown the issues which need to be addressed in the UAE in order to adopt the strategic approach for emergency preparedness, as proposed in this research. Despite being able to achieve the objectives of this research, there were some limitations, which are discussed in the next section.

7.4 LIMITATION OF THE RESEARCH

Like most research, this research has some limitations. While the objectives and research questions were all achieved, there were factors which hindered the progress of the research. For example, there were no academic documents or literature on the subject of emergency management in the UAE. This made the literature review difficult to write and prolonged the research process. The impact of this limitation was minimized by using case studies of the UAE as well as extensive materials on EM in the US, UK and Australia to complement the limited documents on the UAE.

In addition, interviewees provided more information than required for this research. While it is good to see this level of willingness to participate in research, it also prolonged the research process. These two limitations show that this research area is under-researched and the willingness of interviewees to provide information shows their desire for improvement. These limitations have also been taken into consideration in the recommendations section.

7.5 RESEARCH CONCLUSION

This research has successfully achieved its aim and objectives. It has done so by beginning with a historical overview of emergency management practices in the US, UK, Australia and the UAE. The rationale for this is to provide a good background into the research area and concept of emergency management and standards used to carry out operations within this field. In order to better understand the relevance of the EM standards for safety, the

emergency preparedness phase was identified as of crucial importance in achieving effective emergency management. However, a critical examination and evaluation of the emergency preparedness elements shows that even though the UAE has an emergency management standard it uses, the emergency preparedness phase, in particular the elements, has not been given the attention it receives in the US, UK and Australia.

As a whole, it can be concluded that the United Arab Emirates emergency management standard has emergency management implemented but this that standard is incomplete. In addition, unlike the other countries examined, the UAE does not have any emergency preparedness framework or cycle. While the reasons for this vary and might exceed the scope of this research, the research identified some barriers to implementation, although not for developing or instituting a preparedness framework. Therefore, if the UAE government wish to improve emergency management in general and emergency preparedness in particular, there is a need to adopt, implement and regularly monitor the effectiveness of the strategic approach.

7.6 RECOMMENDATIONS

Based on the conclusion of the research, it is strongly recommended that the strategic approach is implemented in a progressive manner, ie, with a comprehensive understanding and application of the eight elements of preparedness. In order to do this, the ten barriers identified in the course of this research should be overcome using the sets of recommended solutions in a complementary manner, as presented and explained in section 6.4.4. In addition, the principles of EM which were continuously referred to in the recommended solutions should be taken into consideration in improving current EM practice in the UAE. The combined understanding of the relevance of EM standard and principles as well as application of the strategic approach to the current EM practice in the UAE will inform the development of an appropriate and effective emergency preparedness framework as seen in the US, UK and Australian models.

The lack of any framework, system or cycle in the UAE system provides a good opportunity to strongly recommend the strategic approach as a means of improving emergency

preparedness and bring it to the forefront of EM practice in the UAE. Based on this, the recommendations drawn from the research findings and the strategic approach have been divided into two parts, which are: recommendations for improving practice in emergency management in the UAE; and recommendation for future research. These two recommendations are provided based on the strategic approach developed based on the research findings.

7.6.1. Recommendation for Policy and Practice

An effective EM standard serves as a guide for all emergency organisations, governments at any level and all stakeholders who need to be involved in emergency management. Therefore, the findings of this research have informed the following recommendations for policy and practice:

Develop policy which supports the development of a preparedness framework and the adopting of a strategic approach. The recommendation is based on the findings of this research which reveal that the US, UK and Australia have all traced problems associated with emergency response back to the preparedness phase. They have developed a preparedness cycle, framework or activities which are suitable for increasing preparedness for the categories of hazards they face in their countries. However, the strategic approach can be adopted as the framework for improving current preparedness practices as well as implementing preparedness in the UAE.

Assess emergency preparedness capabilities of emergency organizations. This recommendation is important for better practice of emergency preparedness in order to determine who has the most appropriate mechanism to implement each element.

Provide orientation for staff. This recommendation for practice is necessary especially for the planning department, which is responsible for planning and all preparedness activities. This recommendation aims to educate planning staff about the elements of emergency preparedness and their application for better preparedness using the strategic approach.

Formulate policy to facilitate a robust emergency preparedness system based on the principles of EM. The purpose of this policy is to ensure that the strategic approach is facilitated with specific consideration for integration and comprehensiveness and other factors emphasized by Canton (2007), CCA (2004), Alexander (2002), to mention a few. These factors include 'all hazards', 'all phases', 'all impact' and 'all stakeholders'.

While these recommendations are important for improving emergency management and preparedness in the UAE, they have also helped to identify potential areas of future research. Some of these areas are discussed in the next sub-section.

7.6.2 Recommendation for Future Research

During this research, some areas which can motivate future research have been identified. While some of these areas could not be discussed during this research since they are not the research focus, they can be considered as areas for future research, and may include:

- The elements, frameworks and cycles of emergency preparedness should be examined from a hazard specific perspective in order to identify if the same framework can be used for all hazards. The US, UK and Australia use the same preparedness framework or cycle of all hazards, but in the literature review for preparedness framework, Pelfrey's model is a hazard specific preparedness model. This is area for potential future research to examine the effectiveness of all these preparedness frameworks or cycles for managing different categories of hazards.
- To undertake a critical contrast and comparison of the EM standards and preparedness frameworks or cycles used in the US, UK and Australia. This critical comparison will help to identify elements and factors which make each standard and element suitable for each country.
- To examine how emergency management standards can be adopted in the UAE, but no documented preparedness framework or cycle or system was identified or discovered in the UAE EM standard.
- To investigate the preparedness approach for international emergency management and for local or national response in the UAE. This is because the UAE has helped

to respond to a cyclone in Oman some years ago, where their response was effective, but their response to local emergency is often problematic. This research area will identify the differences in their preparedness for international and domestic response. It will also identify if the same emergency responders are responsible for the two operations.

These main research areas will contribute significantly to the development of emergency management in the UAE and in general. They will also help to identify areas which require improvements in the UAE or the emergency sector in the US, UK and Australia.

7.7 CONTRIBUTION TOKNOWLEDGE

This research has been rigorous and has contributed significantly to theory and knowledge in emergency management and preparedness. As one of the phases of the emergency management standard, preparedness is crucial for the response phase, as established in chapter two section 2.4. The elements of preparedness identified in this research have also provided in-depth information about the elements that can enhance planning arrangements between emergency organisations and all stakeholders of emergency management in any country. This in-depth understanding of emergency preparedness has contributed to knowledge and practice.

In terms of specific contribution to knowledge, the research has provided better understanding of how the concepts and principles of EM can help to improve the understanding of EM standards. Through the solutions recommended for overcoming the barriers to elements of preparedness, it was realized that through organizing programs to teach EM standards in the form of bespoke training or programs, knowledge of principles of EM can be improved. This recommendation also shows the direct relationship between theory and practice in EM, which increases the effectiveness of both theory and application of EM. It suggests that the curriculum in EM and DM can incorporate modules which are “practice-focused” and tailored for practitioners or professional emergency managers. This recommendation and other solutions also open up opportunities for research on social science theories and approaches

which can be adopted to explain human interaction within emergency organizations for the benefit of increased effectiveness.

Another contribution to knowledge is the use of minarets in mosques for EWS. While this EWS is a non-modern or non-technological method of disseminating early warning, it represents a unique contribution to knowledge and, while the level of effectiveness is yet to be tested, nor have there been complaints of its usage for EWS to local people. While literature and academic work exists on how disaster-affected victims interact, i.e., theories in ecology and social interaction, there are no academic explanations regarding emergency managers and their ability to understand EM standards from a non-EM operational perspective.

In addition, this research has also contributed to the practice of emergency management, particularly emergency preparedness. The critical evaluation of preparedness elements which has taken place in this research has contributed to practice because it has helped to establish that it is not enough to just practice one of the elements, but all eight elements need to be practiced in order to ensure a strategic approach to emergency preparedness. This is a significant improvement on the current practice of the preparedness phase, and means that the contribution of this research has the potential to benefit both the UAE and other countries that use the four-phase emergency management standard.

REFERENCES

Alexander, D. (2002) Principles of emergency planning and management.Harpenden: Terra

Alexander, D. (2005) "Towards the Development of a Standard in Emergency Planning." Disaster Prevention and Management, Vol. 14, No. 2, 2005. pp. 158-175.

Alexander, D. (2006) Globalization of disaster: trends, problems and dilemmas. *Journal of International Affairs* 59(2): 1-22

Alexander, D. (2009) Principles of emergency planning. In U. Fra Paleo (ed.) *Building Safer Communities: Risk Governance, Spatial Planning and Responses to Natural Hazards.* NATO Science for Peace and Security Series, Vol. 58. IOS Press, Amsterdam: 162-174.

Arklay, T. (2012) Management Queensland's State Disaster Management Group: An all agency response to an unprecedented natural disaster", in *Australian Journal of Emergency Management. / 19*

Australian OHS Education Accreditation Board (2012) *Mitigation: Emergency Preparedness*.

Ball, D. J. and Ball-King, L. (2013) Safety Management and Public Spaces: Restoring Balance. Risk Analysis, 33: 763–771. doi: 10.1111/j.1539-6924.2012.01900.x

Bankoff, G., Frerks, G. and Hilhorst, D. (2004) Mapping Vulnerability: Disasters, Development and People. Routledge.

Beckett, M. Hon, R. (2000) Modernising Government in Action: Realising the Benefits of Y2K, The Stationery Office, London, Cm 4703, available at: www.archive.official-documents.co.uk/ document/cm47/4703/4703.htm (Accessed 10 December 2012).

Berke, R. and Campanella, J. (2006) Planning for post disaster resiliency. The Annals of the American Academy of Political and Social Science. 604: 192-207.

Blanchard, W. (2007) What is emergency management? And what are the principles of emergency management. From the emergency management roundtable meeting EMI, March

Brito, J. (2012) "Sending out an S.O.S.: public safety communications interoperability as a collective action problem". Mercatus Publications

Bryman, A. (2001) Social Research Methods, Oxford: Oxford University Press

Bryman, A. (2012) Social research methods (5th ed.) Oxford: Oxford University Press

Bullock, J. (2006) Introduction to emergency management. 2nd Edn; Butterworth-Heinemann publishers

Cabinet Office (2005) Emergency response and recovery: non-statutory guidance to complement Emergency preparedness. Easingwold: Emergency Planning College

Cabinet Office (2009) Expectations and Indicators of Good Practice Set for Category 1 and 2 Responders.Easingwold: Emergency Planning College.

Cabinet Office (2010) available at https://www.gov.uk/government/organisations/cabinet-office [Accessed on October 21, 2013]

Cabinet Office (2011) Emergency preparedness, Emergency Planning; revision to emergency preparedness. CCA Enhancement Programme, October, 2011.

Cabinet Office (2012) available at https://www.gov.uk/government/organisations/ cabinet-office [Accessed on October 21, 2013]

Cabinet Office (2013) *Emergency Response and Recovery Non-statutory guidance accompanying the civil Contingencies Act 2004.* Available at https://www.gov.uk/government/organisations/cabinet-office [Accessed on October 21, 2013]

Cabinet Office (2013) Emergency Response and Recovery Non-statutory guidance accompanying the civil Contingencies Act 2004. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/253488/Emergency_Response_and_Recovery_5th_edition_October_2013.pdf [Accessed on October 21, 2014]

Cabinet Office (2014) Preparation and planning for emergencies: the national resilience capabilities programme. Available at: https://www.gov.uk/preparation-and-planning-for-emergencies-the-capabilities-programme [Accessed on May 16, 2015]

Canton, L. (2007) Emergency management: concepts and strategies for effective programs. Wiley-Interscience publishers

Cassell, C.M. and Symon, G. (2006) 'Taking qualitative methods in organization and management research seriously', Qualitative research in organizations and management: an international journal, Vol. 1., No. 1., 4-12.

CCA (2004) Emergency preparedness: guidance on Part 1 of the Civil Contingencies Act 2004, its associated regulations and non-statutory arrangements. Easingwold: Emergency Planning College

Collis, J. and Hussey, R. (2003) Business Research: A practical guide for undergraduate and postgraduate students. Second ed. Macmillan Press Ltd.

Collis, J. and Hussey, R. (2009) Business Research: A practical Guide for Undergraduate and Postgraduate Students. 3d ed. Hampshire: Palgrave Macmillan

Commonwealth of Australia.(2009) *Australian Emergency Management Arrangements*.The Attorney-General's Department.

Conway, G. (2012) AIIMS Doctrine - What's the next step in the evolution of Incident Management?In*Fire Australia journal*, 9. Available at http://www.afac.com.au/__data/assets/pdf_file/0006/45276/AIIMS_Doctrine_-_Whats_the_next_step_in_the_evolution_of_Incident_Management.pdf [Accessed Date 28 November 2012]

Cooper, D. R. and Schindler, P. S. (2008) Business research methods.New York; McGraw-Hill Irwin.

Coppola, D. (2007) *Introduction to International Disaster Management*. Amsterdam, Butterworth-Heinemann

Coppola, D. (2011) *Introduction to International Disaster Management*. 2nd Edition, Massachusetts: Elsevier.

Creswell, J. W. (2003) Research design: Qualitative, quantitative, and mixed methods approaches. Thousand Oaks, CA: Sage.

Creswell, J. W. (2007) Qualitative inquiry &research design: Choosing among five approaches (2nded.). Thousand Oaks, CA: Sage.

Crondstedt, M. (2002) Prevention, Preparedness, Response, Recovery- an Outdated concept.*The Australian Journal of Emergency Management*, 17 (2). pp.10-13

Crowe, S. et al. (2011)The case study approach. BMC Medical Research Methodology, 11(100)

Cutter, S., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E. and Webb, J. (2008) A place-based model for understanding community resilience to natural disasters. Journal of Global Environmental Change Volume 18: pp598 -606.

Denscombe, M. (2008) 'Communities Of Practice: A Research Paradigm For The Mixed Methods Approach'. Journal of Mixed Methods Research 2.3: 270-283.

Department of Homeland Security (2004) National Incident Management System. March 1, 2004. U.S. Department for Homeland Security, Washington, DC.

Dhanhani, H. A., Duncan, A., & Chester, D. (2010) United Arab Emirates: Disaster Management with Regard to Rapid Onset Natural Disasters. In E. Asimakopoulou, & N. Bessis (Eds.), Advanced ICTs for Disaster Management and Threat Detection: Collaborative and Distributed Frameworks (pp. 65-79). Hershey, PA: Information Science Reference. doi:10.4018/978-1-61520-987-3.ch005

Dillon, B. (2014) *Blackstone's Emergency Planning, Crisis and Disaster Management*, 2nd Ed, Oxford University Press, Oxford

Dillon, B., Dickinson, I., Whiteford, F., and Williamson, J. (2009) Emergency planning officers' handbook. Oxford: Oxford University Press

Easterby-Smith, M., Thorpe, R. and Jackson, P. (2012) Management Research.4thEdn.Sage Publication.

Edwards, F. and Goodrich, D. (2007) "Organizing for Emergency Management" in *Emergency Management Principles and Practice for Local Government*, 2nd Edition, edited by William L. Waugh, Jr., and Kathleen Tierney; Washington, DC: ICMA Press

Emergency Management Australia (1998) Multi-Agency Incident Management, Australian Emergency

Emergency Management Australia (2004) Emergency Management in Australia: Concepts and Principles.

Emirates 24/7, (2014) Newspaper published in the UAE. [online] Available at: http://www.emirates247.com/dibba-earthquake-no-more-tremors-2014-03-10-1.541076 [Accessed 4th May 2015].

EU (2014) EU Civil Protection Mechanism.Humanitarian Aid and Civil Protection. Available online: http://ec.europa.eu/echo/en/what/civil-protection/mechanism [26/02/15]

Fagel, M. (2011) Principles of emergency management and emergency operations centres (EOC) Taylor and Francis group; CRC press

Fakuade, D. (2014) "*Mass population response to major incidents and critical national infrastructure failure*." Excerpt report from PhD thesis, University of Canterbury, New Zealand.

FEMA (1995) Introduction to Emergency Management Course, Washington, USA: FEMA, p. 1-6 cited in The Scope of Emergency Management: Theory, Principles, and Fundamentals of Hazards, Disasters, and U.S. Emergency Management. [Online] Available at www.training.fema.gov (accessed 29/10/2013)

FEMA (2007) Emergency Management Institute (EMI), Principles of Emergency Management, p.4

FEMA (2007) Guide to Emergency Management and Related Terms, Definitions, Acronyms, Programs and Legislation.Available at http://training.fema.gov/EMIWeb/edu/termdef.asp. [Access date 3 September 2012]

FEMA (2012) National Preparedness Guideline.Available at http://www.fema.gov/preparedness-1. [Access date 6 November 2012]

FEMA (2015) National Preparedness; goals and core capabilities. Available at: https://www.fema.gov/national-preparedness [Accessed in March, 15, 2015]

Flick, U. (2011) Introducing research methodology: A beginner's guide to doing a research project. London: Sage

Gall, M. D., Gall, J. P., and Borg, W. R. (2003) Educational research: An introduction (7th ed.). Boston, MA: A & B Publications.

Goddard, W. and Melville, S. (2004) Research Methodology: An Introduction, (2nd ed.) Oxford: Blackwell Publishing

Godschalk, D.R. (1991) Disaster mitigation and hazard management. In: Thomas, E.D., Hoetmer, G.J. (Eds.), Emergency Management: Principles and Practice for Local Government. International City Management Association, Washington, DC, pp. 131–160.

Gordon, J. (2002) Comprehensive emergency management for local governments: demystifying emergency planning. Brookfield, Conn.: Rothstein Associates

Government of Western Australian (2012) Emergency Preparedness Report published by Australian Government. Available at http://www.dpc.wa.gov.au/D3BF7EE5-C08A-483A-909D-11586E1E478C/FinalDownload/DownloadId-99C0A9C928A64FEBA63313FFC54B9F39/D3BF7EE5-C08A-483A-909D-11586E1E478C/Publications/Documents/WA%20State%20Emergency%20Preparedness%20Report%202012.pdf . [Access date 28 November 2013]

Green, W. (2000) Exercise alternatives for training emergency management command centre staffs. [S.l]: Universal Publishers

Green, W.G. (2002) Four phases of emergency management .Electronic Encyclopedia of Civil Defense and Emergency Management. Available from: <http://www. richmond.edu/~wgreen/encyclopedia.htm>. [Accessed 20 Nov 2012]

Grote, G., (2012) Safety management in different high-risk domains – All the same? Safety Science, 50, 1983-1992.

Gulf News (2012) Tower cladding in the UAE fuels fire. Retrieved September 15,2012, http://gulfnews.com/news/gulf/uae/housing-propearty/tower-cladding-in-uae-fuel-fire-1.1016836.

Haddow, G., Bullock, J. and Coppola, D. (2011) *Introduction to Emergency Management*. 4th ed. Burlington: Elsevier.

Hiles A. (2004) Business continuity: best practices: world-class business continuity management. 2nd Edn. Rothstein Associates Inc

Hills, A. (1994) Co-ordination and disaster response in the United Kingdom, *Disasterholistic paradigm,* Disaster Prevention and Management, 10 (3), pp. 189 96.

Hubbard, D. (2009) The Failure of Risk Management: Why It's Broken and How to Fix It. John Wiley & Sons

IFRC - The International Federation of Red Cross and Red Crescent Societies (2014) What is vulnerability? Available at: https://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/what-is-vulnerability/ [26/2/15]

International Association of Emergency Managers (2013) [Online] Available at http://www.iaem.com/documents/Principles-of-Emergency-Management-Flyer.pdf [accessed 29 October 2013]

Jakob, A. (2009) Risk: an introduction. Cambridge; Malden, MA

Johnson, B. and Christensen, L. (2010) Educational Research: Quantitative, Qualitative, and Mixed Approaches. UK: SAGE

Jordan, B. Baker, H. Howari, F. (2005) Tsunami hazard along the coasts of the United Arab Emirates. Arabian Coast 2005 Conference, Department of Geology, United Arab Emirates University.[online] Available at: <http://www.iahr.net/site/e_library/ConfPro/ArabianCoast2005/Full%20Papers/012-Tsunami%20hazards%20along%20the%20coasts%20of%20the%20United%20Arab%20Emir.pdf> [Accessed 15 September 2012].

Kapucu, N. (2006) "Interagency communication networks during emergencies. Boundary spanners in multiagency coordination".The American Review of Public Administration June 2006 vol. 36 no.2207-225

Kapucu, N. (2010) Multi-Agency and Cross-Sector Coordination in Response to Disasters , LAP Lambert Academic Publishers, UK

Klassen, R. M., Bong, M., Usher, E. L., Chong, W. H., Huan, V. S., Wong, I. Y. F, and Georgiou, T. (2009) Exploring the validity of a Teachers' Self-Efficacy Scale in five countries. Contemporary Educational Psychology, 34 (1), 67-76.

Klein, H. K. & R. Hirschheim. (2001) Choosing Between Competing Design Ideals in Information Systems Development, Information Systems Frontiers, 3(1), 75-90.

Kowalik, Z., Knight, W., Logan, T., & Whitmore, P. (2005) "Numerical modeling of the global tsunami: Indonesian tsunami of 26 December 2004". Science of Tsunami Hazards 23 (1): 40-56.

Krippendorff, K. (2004) Content Analysis: An Introduction to Its Methodology (2nd ed.). Thousand Oaks, CA: Sage

Kumar, A. (2013) Natural Hazards of the Arabian Peninsula: Their Causes and Possible Remediation. In Earth System Processes and Disaster Management, Berlin: Heidelberg

Kvale, S. (2007) Doing interviews. Thousand Oaks, CA: Sage.

Lerche, I. and Glaesser, W. (2006) Environmental risk assessment: quantitative measures, anthropogenic influences, human impact. Berlin: Springer

Lerche, I. and Glaesser, W. (2006) Environmental risk assessment: quantitative measures, anthropogenic influences, human impact. Berlin: Springer

Li, G. and Baker, S. (2007) Crash risk in general aviation. JAMA: The Journal of the American Medical Association, 297 (14), 1596-1598.

Lofstedt, R. and Boholm, A. (2009) RISK: The Earthscan reader on risk. Earthscan; London

Lundgren R., and McMakin A., (2009) Risk Communication: Handbook for communicating environment, safety, and Health Risks. 4thEdn; Wiley-IEEE publishers

Mahoney, C. (2013) Legacy of High-rise fire risks in Dubai. IFSEC Global.com. Available online: http://www.ifsecglobal.com/legacy-of-high-rise-fire-risks-in-dubai/ [Accessed on February 15, 2015]

Mason, J. (2004) Semi-structured interview. In M. Lewis-Beck, A. Bryman, & T. Liao (Eds.), Encyclopedia of social science research methods. (pp. 1021-1022). Thousand Oaks, CA: SAGE Publications.

McCreight, R. (2011). An introduction to emergency exercise design and evaluation. Plymouth, UK: published by government institutes, The scarecrow press, Inc.

McEntire, D. (2001) Triggering Agents, Vulnerabilities and Disaster Reduction: Towards a Holistic Paradigm, Disaster Prevention and Management, 10(3), 189-196

McEntire, D.A. and Myers, A. (2004) Preparing communities for disasters: issues and processes for government readiness. *Disaster Prevention and Management* 13(2): 140-152

Mendonca, D., G., Beroggi, E. G. and Wallace. W. A. (2001). "Decision Support for Improvisation during Emergency Response Operations." International Journal of Emergency Management 1(1): 30-38.

Michigan Department of State Police (1998) *Emergency Management Division*. [pdf], pp-6 Available at: http://www.michigan.gov/documents/mspemd_pub206_local_standards_8716_7. [Accessed 10 November 2013].

Molino, L. N. (2006) Emergency Incident Management Systems – Fundamentals and Applications. Hoboken, NJ: John Wiley & Sons

Moore, T. and Lakha, R., (2006) *Tolley's handbook of disaster and emergency management.Principles and practice*. Oxford: Elsevier

NCEMA (2012) Mission of NCEMA. Available at: http://www.ncema.gov.ae/en/about-ncema/mission.aspx [access date 10 March 2015]

NCEMA (2013) "NCEMA, Australia Government sign MoU". Available online at: http://www.ncema.gov.ae/en/media-center/news/18/6/2013/ncema-australian-government-sign-mou.aspx?DisableResponsive=1#page=1 (Retrieved on 26/01/2015)

NCEMA (2014)Your guide for emergencies. Preparedness is the most important step towards protection. NCEMA; UAE. Available online at: http://www.ncema.gov.ae/content/documents/NCEMA%20Eng%20Daleel.pdf

Neuendorf, K. A. (2002) The Content Analysis Guidebook. Thousand Oaks, CA: Sage

Nimpuno, K. (1998) *Disaster management Glossary or disaster and emergency reference*.United Nation centre.

Norman, S. and Coles, E. (2003) Order out of chaos?A critical review of the role of central, regional and local government in emergency planning in London.*International Journal of Mass Emergencies and Disasters* (2002) 20(3) and *Australian Journal of Emergency Management* 18(2): 98-107

NPIA.(2009) Guidance on command and control. Available at http://www.acpo.police.uk/documents/crime/2009/200907CRICCG01.pdf [Access date 28 November 2013].

O'Brien, G., and Read, P. (2005) Future UK emergency management: new wine, old skin? Disaster Prevention and Management.14(3). pp. 353-361

O'Brien, G., O'Keefe, P. (2004) *Managing Adaptation to Climate Risk: Beyond Fragmented Responses*. Oxon: Routledge.

O'Brien, M. (2002) Making better environmental decisions: an alternative to risk assessment, Cambridge, Massachusetts: MIT Press

Pelfrey, William V. (2005) The Cycle of Preparedness: Establishing a Framework to Prepare for Terrorist Threats, *Journal of Homeland Security and Emergency Management*: Vol. 2:

Perrow, C. (2011) The next catastrophe: reducing our vulnerabilities to Natural, Industrial, and terrorist disasters. Princeton University Press

Perry, R. W. and Quarantelli, E. L. (2005) What is disaster? New Answers to old questions.Xlibris

Petak, W.J (1985) *Emergency management: a challenge to public administration*. Public Administration Review 45, 3–7.

Phillips, B. D. (2005) "Disaster as a Discipline: The Status of Emergency Management Education in the US". International Journal of Mass-Emergencies and Disasters. Vol. 23 (1): 111–140

Pitt Review (2008) Learning Lessons from the 2007 floods. Cabinet Office, London. Available online: http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/pittreview/_/media/assets/www.cabinetoffice.gov.uk/flooding_review/pitt_review_full%20pdf.pdf [05/03/2015]

Pollock, K. and Coles, E. (2015) Interoperability; theory and practice in UK emergency management. EPC Occasional papers. New Series; Number 13, April 2015.

Regester, M. and Larkin, J. (2008) Risk Issues and Crisis Management in Public Relations: A Casebook of Best Practice. 4th Edn. Kogan Page publishers

Remenyi, D., Williams, B., Money, A. & Swartz, E. (1998) Doing research in business and management: An introduction to process and method. London: Sage.

Robson, W. (1997) *Strategic Management and Information Systems: An Integrated Approach*. London: Pitman Publishing.

Roux-Dufort, C. (2007) 'A Passion for Imperfections; Revisiting Crisis Management', in Pearson, C., Roux-Dufort, C. and Clair, J. (Eds), The International Handbook of Organizational Crisis Management, Sage, Thousand Oaks, CA

Salter, J. (1997) Trend Report: risk management in a disaster management context. Journal of Contingencies and Crisis Management 5(1): 60-65

Saunders, M., Lewis, P. and Thornhill, A. (2007) Research Methods for Business Students 4th ed. Harlow: FT Prentice-Hall.

Saunders, M., Lewis, P. and Thornhill, A. (2009) Research methods for business students.5th ed. England.

Secretary of Homeland Security (2007) National Preparedness Guidelines. Available at http://www.fema.gov/pdf/emergency/nrf/National_Preparedness_Guidelines.pdf [Access date 28 November 2013]

Sekaran, U. (2006) Research Methods for Business: A Skill Building Approach. 4th Ed. UK: John Wiley & Sons

Sendai Framework (2015) Sendai Framework for disaster risk reduction 2015 -2030.

Shaw, G., Haddow, G., Rubin, C., and Coppola, D. (2003) "Hazards Risk Management." FEMA Emergency Management Institute Higher Education Project. Emmitsburg.

Silverman, D. (2013) Doing Qualitative Research: A practical handbook. London: Sage

Smith, D. and Fischbacher, M. (2009) The changing nature of risk and risk management: the challenge of borders, uncertainty and resilience. Risk Management (2009) 11, 1 – 12. doi: 10.1057/rm.2009.1

Smith, J.(2003) Civil Contingency Planning in Government, Parliamentary Affairs, London: Hansard

Smith, K. (2001) Environmental Hazards. 3rd ed. London and New York: Routledge.

Stemler, S. (2001) "An Overview of Content Analysis". Practical Assessment, Research & Evaluation 7 (17).

Suter, B. (2006) Labour Migration to the United Arab Emirates-A field Study on Regular and Irregular Migration in Dubai.[online] Available at: http://www.academia.edu/3321646/Labour_Migration_in_the_United_Arab_Emirates_2006_. [Accessed at 8 November 2013

Sutrisna, M. (2012) Research Methodology in PhD Research: An Introduction.

Symon, G. and Cassell, C.M. (2012) *The practice of qualitative organizational research: core methods and current challenges,* London: Sage Publications.

The Telegraph (2015) [online] Available at: http://www.telegraph.co.uk/news/worldnews/asia/nepal/11567382/Nepal-earthquake-Death-toll-rises-to-4310-as-it-happened-April-27.html. /. [Accessed 4th May 2015]

Trochim, M. K. (2006) Research methods knowledge base. Web centre for social research methods. Retrieved online from: http://www.socialresearchmethods.net/kb/sampling.php [21/02/15]

Trochim, W. (2002) Types of Surveys. Research Methods Knowledge Base.

UAE Interact (2013) News & Information on the United Arab Emirates (UAE). [online] Available at: http://www.uaeinteract.com/english/factfile/. [Accessed 8 November 2013]

UNISDR (2014) Progress and challenges in Disaster Risk Reduction: A contribution towards the development of policy indicators for the post-2015 framework on disaster risk reduction. UN.

United Nations High Commissioner for Refugees UNHCR (2007) *Handbook for Emergencies*.Third ed. Geneva Available at http://www.unhcr.org/cgi-bin/texis/vtx/home/opendocPDFViewer.html?docid=472af2972&query=UNHCR. [Access Date 29 November 2013]

US Environmental Protection Agency (2011) The Federal Emergency Management Agency's National Incident Management System. Available at http://www.epa.gov/oem/content/nrs/nims.htm. [Access Date 8 May 2012]

Walle van de, B. and Turoff, M. (2008) Decision support system for emergency situations, In Handbooks on decision support systems. 2nd Eds. Burstein, F. and Holsapple C.W., 39-63. Berlin; Springer

WAM. (2011) Sharjah Executive Council reshuffles Crisis and Disaster Management Team. [Online] Available at http://www.wam.ae/servlet/Satellite?c=WamLocEnews&cid=1289995456553&pagename=WAM%2FWAM_E_Layout. [Access date 28 November 2013]

Watkins, M.D., Bazerman, M. H. (2004) Predictable surprises: the disasters you should have seen coming. Harvard Business Review. Mar: 81 (3):72 – 80, 140

Waugh W, L and Streib G., Jr. (2006) *Georgia State University Collaboration and Leadership for Effective Emergency Management*.*Public Administration review* .Special issue. 131-39

Waugh, W, L., Jr., (2000) *Living with Hazards, Dealing with Disaster: An Introduction to Emergency Management*. New York: M.E. Sharpe, Inc.

Waugh, W. and Tierney, K. (2007) *Emergency Management: Principles and Practice for Local Government* (2nd edn). ICMA Press, International City Management Association, Washington, D.C., 366 pp

William, M. K. T. (2006) Research Method Knowledge Base. Deduction and Induction [online], Available from: http://www.socialresearchmethods.net/kb/dedind.php [Accessed 18 March 2008].

Wilson, D. (2001) Building in hazardous locations. Masters builders Australia, Canberra.

Wilsona, J., Oyola-Yemaiel, A. (2001) *The evolution of emergency management and the advancement towards a profession in the United States and Florida*. Safety Science.39 pp.117–131

Wise, C, R. (2006) Organising for Homeland Security after Katrina: Is Adaptive Management what is missing?Public Administration review. 6. 303-318

Yin, R. K. (2003) Case Study Research: Design and methodology, London, SAGE.

Yin, R. K. (2009) Case study research: Design and methods (4th Ed.). Thousand Oaks, CA: Sage

APPENDIX - A

Strategic approach in improving emergency preparedness

Hamdan Alteneiji[1] and Prof Vian Ahmed[2]

1ph.D Student, Salford University, SoBE. Email: h.altunaiji@edu.salford.ac.uk
2 Director of postgraduate students, Salford University, SoBE. Email: v.ahmed@salford.ac.uk

Abstract:

The occurrence of disasters in the world has increased significantly over recent years and the United Arab Emirates (UAE) has had its share of devastating incidents. The impact of such disasters in the UAE has become a major concern for the government and has caused problems for businesses and residents. These problems have informed the need to be better prepared to manage disasters and emergencies when they occur in the UAE. The UAE, like many other countries, seeks to be adequately prepared for any disasters regardless of scale. While several preparedness measures are in place in the country, it seems there is a need to improve preparedness for disasters in a more strategic way. This is because the strategic approach for emergency preparedness is considered as an overall aim and means of achieving long-term effectiveness in emergency preparedness. Therefore the aim of this paper is to highlight the importance of the strategic approach and how in-depth understanding and application of elements of emergency preparedness can help to strategically improve emergency preparedness in the UAE.

In view of this aim, this paper discusses the application of elements of emergency preparedness in countries such as the United States of America (USA), United Kingdom (UK) and Australia, which are countries that have inspired emergency frameworks in the UAE. An extended literature review of elements of emergency preparedness and the limitation of their application in different countries forms both the theoretical and practical basis for identifying the problems in the UAE. It is expected that by so doing, issues which make emergency preparedness problematic in the UAE will be better understood and the areas which require improvement will be brought to light.

Keywords:

Disaster, Emergency preparedness, Preparedness elements, Strategic approach, UAE

APPENDIX - B

A Conceptual Framework for Emergency Preparedness in the United Arab Emirates (UAE)

Hamdan Alteneiji[1] and Prof Vian Ahmed[2]

1ph.D Student, Salford University, SoBE. Email: h.altunaiji@edu.salford.ac.uk
2 Director of postgraduate students, Salford University, SoBE. Email: v.ahmed@salford.ac.uk

Abstract:

Globally, it is estimated that natural disasters were responsible for more than 535,000 fatalities during the past decade, with direct damage to infrastructure and crops totaling more than $684 billion. Such figures highlight the importance of investing in the science of Emergency Management (EM) as the means of saving life and property by increasing capabilities to mitigate against, prepare for, respond to, and recover from all kinds of hazard. Research established in the field shows that there are a number of standards and models that strategically address the main phases of emergency management, which have been adopted by developed countries.

However, the United Arab Emirates (UAE) suffers from a lack of strategic preparedness to cope with hazards. The UAE is one of the gulf countries that has been affected in the past by disasters and this will continue to be the case in the future. Among the factors which constitute increased disaster risk for the UAE are its rapid rate of construction, its vulnerability to earthquakes and the fact that one of its neighbours, the Sultanate of Oman, is classified as a hurricane area. Although there now exists a government body, the National Crisis and Emergency Management Authority (NCEMA), set up in 2007, clearly there are deficiencies in the new agency's ability to prepare for threats.

The aim of this paper to create a conceptual framework of emergency preparedness for the UAE in order to increase the capacity for preparedness to respond, in a professional manner, to all kinds of hazard. With this in mind, this paper reviews international standards of emergency management in general, including those of the UAE, as well as the various frameworks and models concerning preparedness in particular. This will allow the identification of the key elements which effect preparedness.

Keywords: Emergency Management, Emergency Management Standards, Emergency Preparedness, Preparedness Frameworks, UAE.

APPENDIX - C

Participant Invitation Letter

Pilot Study

Dear Participant,

I would like to invite you to take part in a PhD research project entitled: A Strategic Approach to Emergency Preparedness in the UAE

The main findings from the literature were eight key elements which affect emergency preparedness, mentioned below, and the aim of this pilot study is to see whether these eight key elements are comprehensive enough to form a basis for an emergency preparedness stage.

The elements are (warning system, risk management, information system, planning, training, exercising, organise/equip, public education).

The pilot study is in a form of questions and it will take not more than 30 minutes to complete. There are no identified risks from participating in this research, it is completely voluntary and you may refuse to participate without consequence.

Attached to this invitation is a draft interview guide. This will provide you with further information about the research aim, objective, interview questions and the researcher contact details if you have any questions.

I hope you choose to take part in these interviews and to consider sharing your experience, which will help me in identifying ways to improve Emergency Preparedness in the UAE.

Sincerely yours,

PhD Researcher
College of Science & Technology
University of Salford
Maxwell Building (Room 401)
Phone +44 (0) 161 833 0058
Mobile +44 (0)

Draft Interview Guide
Pilot study with eight international experts

The aim of this research is to investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government in order to strategically improve the current level of emergency preparedness in the UAE.

The following objectives have been drawn from this aim to achieve the purpose of this research:

Research Objectives

6. To provide a historical overview of emergency management up to present day practice, including a review of emergency management frameworks established by national governments.
7. To examine the emergency management standards and preparedness frameworks applied in the US, UK, Australia and the UAE.
8. To identify and evaluate the emergency preparedness elements and study the existing UAE emergency management standard.
9. To explore and identify the barriers associated with emergency preparedness in the UAE.
10. To draw recommendations for effective emergency preparedness strategy for the UAE.

The main findings from the literature were eight key elements which affect emergency preparedness mentioned below and the aim of this pilot study is to see whether these eight key elements are comprehensive enough to form a basis for the emergency preparedness stage.

The elements are (warning system, risk management, information system, planning, training, exercising, organise/equip, public education)

PART I- INTERVIWEE INFORMATION

- What is your current position?
- How long have you been in this position?
- How long have you been in the public safety / emergency management profession?

PART II- INTERVIEW QUESTIONS

1. According to you, are these eight key elements comprehensive enough to serve as a basis for the emergency preparedness stage or do you think some elements have to be removed or others added?

APPENDIX - D

Participant Invitation Letter
Federal Level

Dear Participant,

I would like to invite you to take part in a PhD research project entitled: A Strategic Approach to Emergency Preparedness in the UAE

The purpose of this interview is to explore to what extent these eight elements of the preparedness stage are implemented in the UAE's emergency management standard, which will help me to understand the degree of readiness in the United Arab Emirates. Therefore, I will be able to draw up recommendations for emergency preparedness in order to implement the professionally in the UAE.

The interview is in the form of semi-structured type questions. There are no identified risks from participating in this research, it is completely voluntary and you may refuse to participate without consequence.

Attached to this invitation is a draft interview guide. This will provide you with further information about the research aim, objective, interview questions and the researcher contact details if you have any questions.

I hope you choose to take part in this interview and to consider sharing your experience, which will help me in identifying ways to improve emergency preparedness in the UAE.

Sincerely yours,

PhD Researcher
College of Science & Technology
University of Salford
Maxwell Building (Room 401)
phone +44 (0) 161 833 0058
e-mail : h.altunaiji@edu.salford.ac.uk

Draft Interview Guide

Federal Level

The aim of this research is to investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government in order to strategically improve the current level of emergency preparedness in the UAE.

The following objectives have been drawn from this aim to achieve the purpose of this research:

Research Objectives

1. To provide a historical overview of emergency management up to present day practice, including a review of emergency management frameworks established by national governments.
2. To examine the emergency management standards and preparedness frameworks applied in the US, UK, Australia and the UAE.
3. To identify and evaluate the emergency preparedness elements and study the existing UAE emergency management standard.
4. To explore and identify the barriers associated with emergency preparedness in the UAE.
5. To draw recommendations for effective emergency preparedness strategy for the UAE.

The main findings from the literature were eight key elements which affect the emergency preparedness stage mentioned below and the aim of these interviewsis to examine the current practice of the elements in the UAE's emergency management standard. Do these elements exist in the UAE's EMS or are there barriers to their implementation?

The elements are (warning system, risk management, information system, planning, training, exercising, organise/equip, public education)

PART I- INTERVIWEE INFORMATION

- What is your current position?
- How long have you been in this position?
- How long have you been in the public safety / emergency management profession?

PART II- INTERVIEW QUESTIONS

1. What is the current situation of the element of Risk Assessment and what are the barriers facing this element?
2. What is the current situation of the element of Early Warning System and what are the barriers facing this element?
3. What is the current situation of the element of Information system and what are the barriers facing this element?
4. What is the current situation of the element of Planning and what are the barriers facing this element?
5. What is the current situation of the element of Training and what are the barriers facing this element?
6. What is the current situation of the element of Exercise and what are the barriers facing this element?
7. What is the current situation of the element of Organise Equip and what are the barriers facing this element?
8. What is the current situation of the element of Public Education and what are the barriers facing this element?

I do hope that you kindly agree to be a part of this study and share your experience. This will help me to understand the real level of preparedness in the UAE's emergency management standard in order to make recommendations that would

contribute to development of emergency management in general and preparedness in particular.

Researcher: HamdanAlteneiji
Contact Details: altinige@hotmail.com

APPENDIX - E

Participant Invitation Letter
Local Level

Dear Participant,

I would like to invite you to take part in a PhD research project entitled: A Strategic Approach to Emergency Preparedness in the UAE

The purpose of this interview is to triangulate the results discovered at federal level regarding the barriers which act as an obstacle for the emergency preparedness stage in the UAE's emergency management standard, with the local level. In seeing whether or not you agree with these barriers, or whether indeed there are more, will help me to understand the degree of readiness in the United Arab Emirates.I will therefore be able to draw up recommendations for implementing emergency preparedness in the UAE.

The interview is in the form of semi-structured type questions. There are no identified risks from participating in this research, it is completely voluntary and you may refuse to participate without consequence.

Attached to this invitation is a draft interview guide. This will provide you with further information about the research aim, objective, interview questions and the researcher contact details if you have any questions.

I hope you choose to take part in this interview and to consider sharing your experience, which will help me in identifying ways to improve emergency preparedness in the UAE.

Sincerely yours,

PhD Researcher
College of Science & Technology
University of Salford
Maxwell Building (Room 401)
phone +44 (0) 161 833 0058
e-mail : h.altunaiji@edu.salford.ac.uk

Draft Interview Guide

Local Level

The aim of this research is to investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government in order to strategically improve the current level of emergency preparedness in the UAE.

The following objectives have been drawn from this aim to achieve the purpose of this research.

RESEARCH OBJECTIVES

1. To provide a historical overview of emergency management up to present day practice, including a review of emergency management frameworks established by national governments.
2. To examine the emergency management standards and preparedness frameworks applied in the US, UK, Australia and the UAE.
3. To identify and evaluate the emergency preparedness elements and study the existing UAE emergency management standard.
4. To explore and identify the barriers associated with emergency preparedness in the UAE.
5. To draw recommendations for effective emergency preparedness strategy for the UAE.

MAIN FINDINGS FROM THE LITERATURE

The main findings from the literature were eight key elements which affect emergency preparedness, which are warning system, risk management, information system, planning, training, exercising, organise/equip, public education.

PART I- INTERVIEWEE INFORMATION

- What is your current position?
- How long have you been in this position?
- How long have you been in the public safety / emergency management profession?

PART II- INTERVIEW QUESTIONS

1. What is the current situation of the element of Risk Assessment and what are the barriers facing this element?
2. What is the current situation of the element of Early Warning System and what are the barriers facing this element?
3. What is the current situation of the element of Information system and what are the barriers facing this element?
4. What is the current situation of the element of Planning and what are the barriers facing this element?
5. What is the current situation of the element of Training and what are the barriers facing this element?
6. What is the current situation of the element of Exercise and what are the barriers facing this element?
7. What is the current situation of the element of Organise Equip and what are the barriers facing this element?
8. What is the current situation of the element of Public Education and what are the barriers facing this element?

I do hope that you kindly agree to be a part of this study and share your experience. This will help me to understand the real level of preparedness in the UAE's emergency management standard in order to make recommendations that would contribute to development of emergency management in general and preparedness in particular.

Researcher: HamdanAlteneiji

Contact Details: altinige@hotmail.com

APPENDIX - F

Participant Invitation Letter
(Ranking with both Federal and Local Levels)

Dear Participant,

I would like to invite you to take part in a PhD research project entitled: A Strategic Approach to Emergency Preparedness in the UAE

The purpose of this questionnaire is to rank the barriers discovered by this research, based on the priority of the barriers. Therefore, this will help to draw up recommendations for emergency preparedness in order to implement it professionally in the UAE.

The questions are in a form of structured type questions. There are no identified risks from participating in this research, it is completely voluntary and you may refuse to participate without consequence.

Attached to this invitation is a draft interview guide. This will provide you with further information about the research aim, objective, interview questions and the researcher contact details if you have any questions.

I hope you choose to take part in this interview and to consider sharing your experience, which will help me in identifying ways to improve emergency preparedness in the UAE.

Sincerely yours,

PhD Researcher
College of Science & Technology
University of Salford
Maxwell Building (Room 401)
phone +44 (0) 161 833 0058
e-mail : h.altunaiji@edu.salford.ac.uk

Draft Interview Guide

(Ranking with both Federal and LocalLevels)

The aim of this research is to investigate the state of emergency preparedness in the UAE, identify limitations and provide recommendations for the UAE government in order to strategically improve the current level of emergency preparedness in the UAE.

The following objectives have been drawn from this aim to achieve the purpose of this research:

Research Objectives

1. To provide a historical overview of emergency management up to present day practice, including a review of emergency management frameworks established by national governments.
2. To examine the emergency management standards and preparedness frameworks applied in the US, UK, Australia and the UAE.
3. To identify and evaluate the emergency preparedness elements and study the existing UAE emergency management standard.
4. To explore and identify the barriers associated with emergency preparedness in the UAE.
5. To draw recommendations for effective emergency preparedness strategy for the UAE.

MAIN FINDINGS FROM THE DATA ANALYSIS

The main findings from the data analysis in this research were ten barriers acting as obstacles for the implementation of the eight elements concerning the research. What is needed from you is to re-organize these ten barriers according to their importance in your point of view, with the most important barrier as 1 and the least important as 10.

PART I- INTERVIWEE INFORMATION

- What is your current position?
- How long have you been in this position?
- How long have you been in the public safety / emergency management profession?

PART II- INTERVIEW QUESTIONS

Please organise these barriers based on the priority affecting the emergency preparedness framework.

1. Good understanding of the EM standard.

1 2 3 4 5 6 7 8 9 10

2. Government employee training.

1 2 3 4 5 6 7 8 9 10

3. Speed of submitting tasks

1 2 3 4 5 6 7 8 9 10

4. Availability of public awareness strategies

1 2 3 4 5 6 7 8 9 10

5. Coordination between the federal and local government.

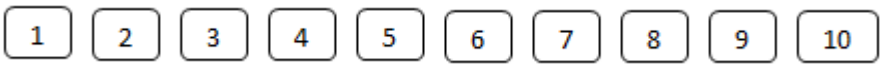
1 2 3 4 5 6 7 8 9 10

6. Change of organisational culture and attitudes.

7. Stakeholder training.

8. Clarity of policies and regulations.

9. Coordination between government and stakeholders.



10. Speed up initiatives leading to emergency preparedness